OFFICIAL PUBLICATION OF THE PROCEEDINGS AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

VOLUME 44, NO. 18
AUGUST 29, 1955

AMERICAN

DYESTUFF REPORTER

A.A.T.C.C. CONVENTION ISSUE

and another problem is solved...

The dyer and the Du Pont demonstrator, working together, have solved another problem.

Like all Du Pont demonstrators, this man is exceptionally well qualified to be of assistance. Not only is he a trained technician, but he's also an all-around textile man with wide experience in all phases of dyeing and finishing.

His job is to work directly with any dyer or finisher who needs help with a problem . . . *any* problem. The demonstrator is glad to help with anything from simple shade matching to training personnel. He'll work out levelness problems, show the newest dyeing methods, advise on the handling of the newer synthetic fibers and their blends, and set up new dyeing procedures.

This group of highly trained and experienced demonstrators is only a part of Du Pont's unsurpassed technical-service group.

The demonstrator is backed up by service and research laboratories staffed by highly skilled technicians and chemists—all ready to work on customers' problems. Contact: E. I. du Pont de Nemours & Co. (Inc.), Dyes and Chemicals Division, Wilmington 98, Delaware.

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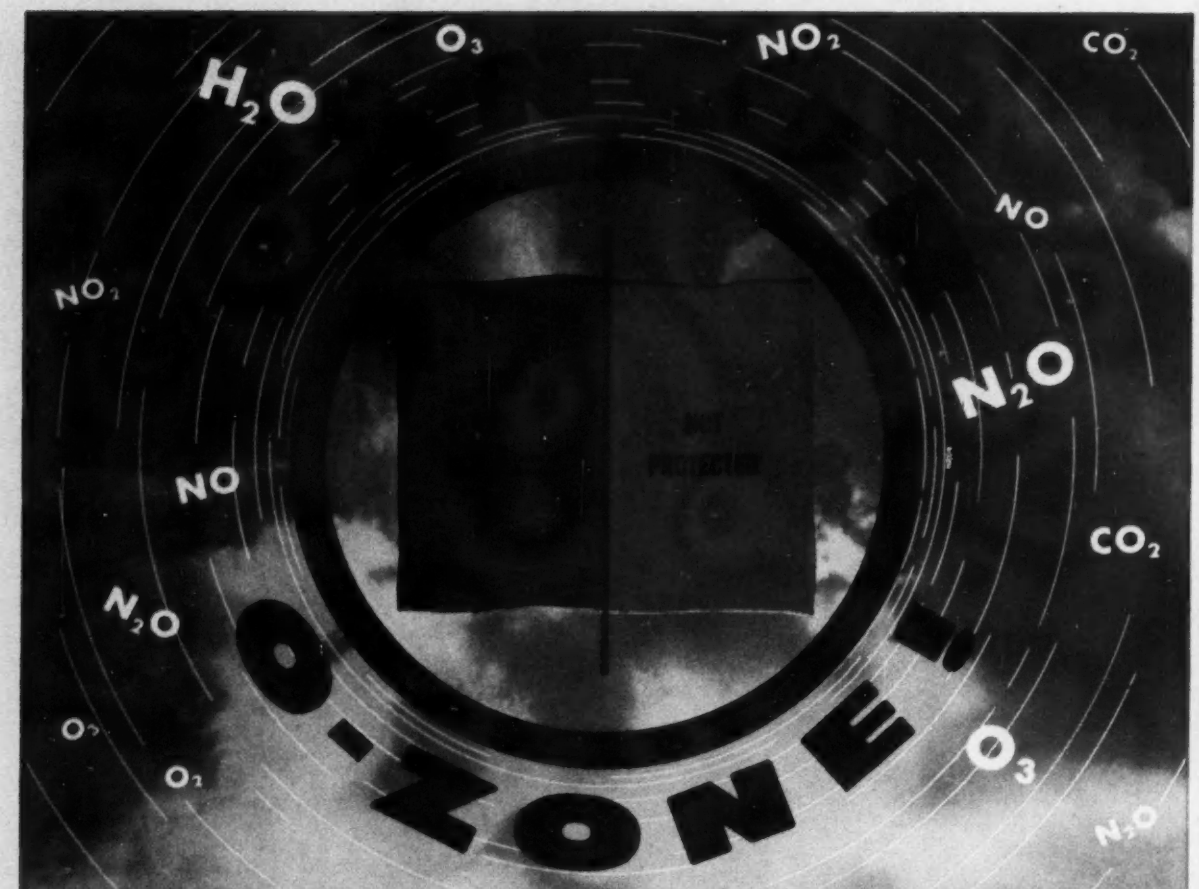

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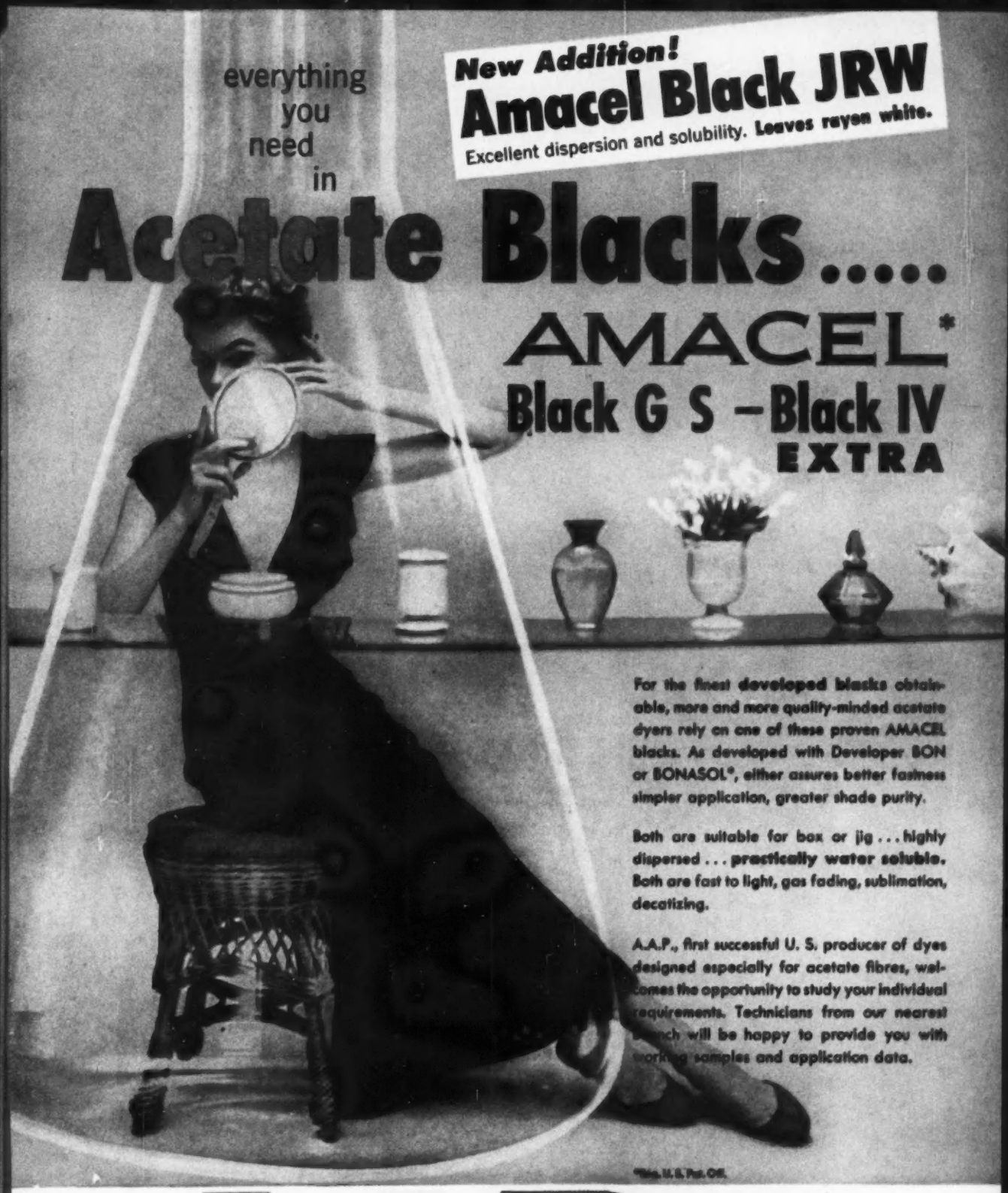
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A.A.P., first successful U. S. producer of dyes designed especially for acetate fibres, welcomes the opportunity to study your individual requirements. Technicians from our nearest branch will be happy to provide you with working samples and application data.
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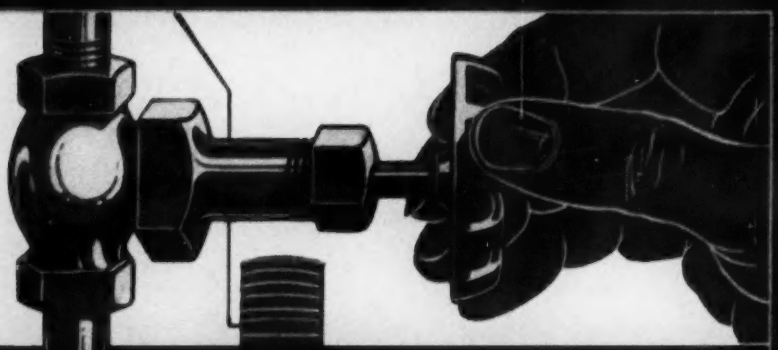

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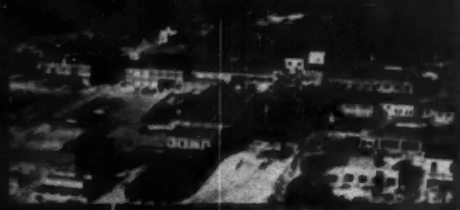

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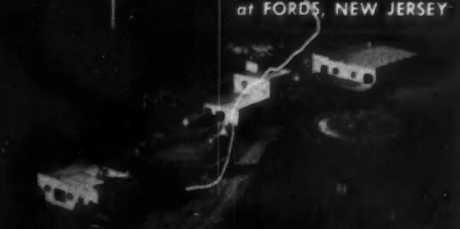

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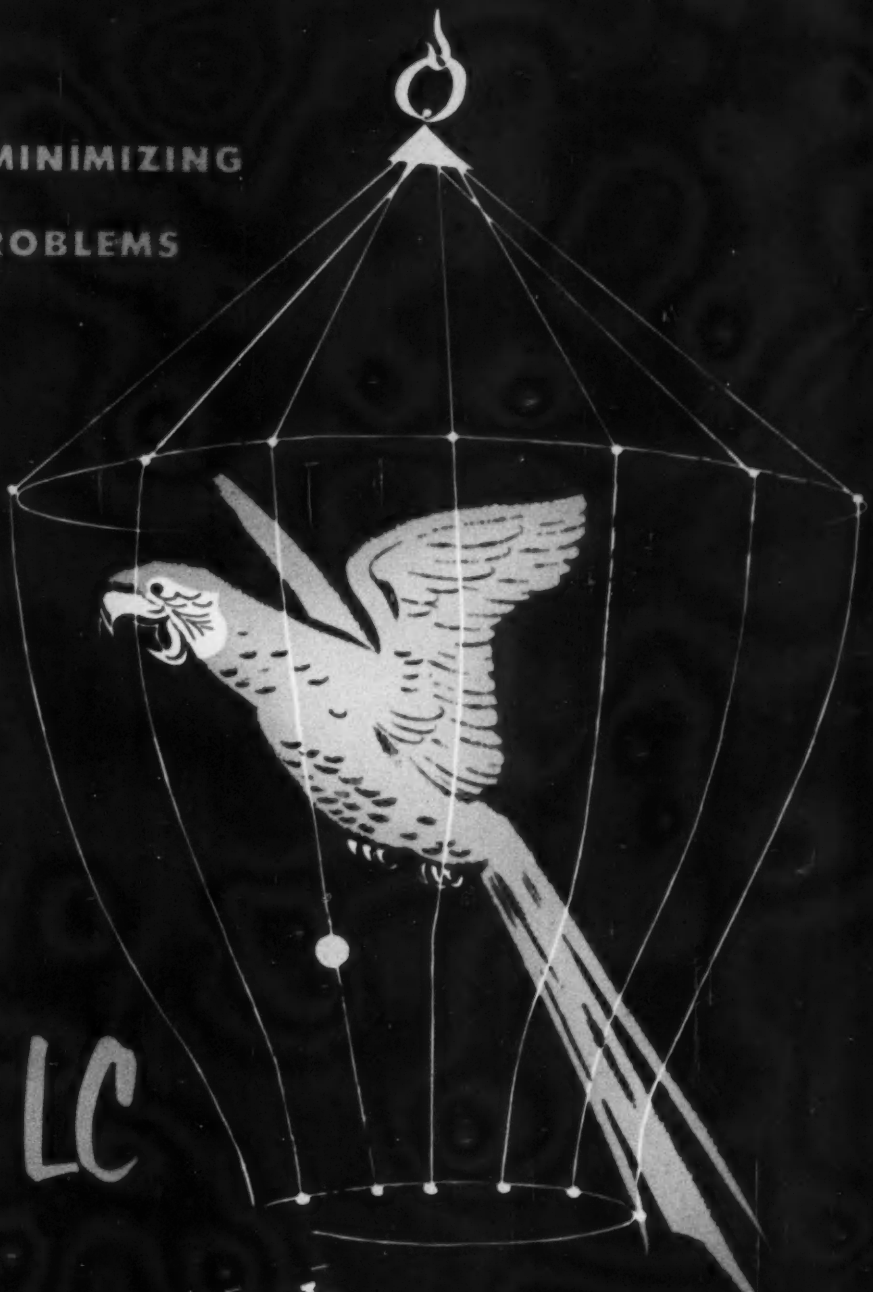

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Phenomenally successful since its introduction several months ago, HILTONE LC has become a standard product in the textile industry. This Hilton-Davis "first" is the answer to industry's demand for low crock colors.

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for WOOL, NYLON and ACETATE. Effective for processing top, stock, yarn and piece goods. Produces sharper contrast between white and colored patterns in checks, plaids and tweeds. Eliminates yellow cast of wool and synthetic fibers.

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used in the same manner as Dergopal C and for the same fibers and fabrics when a definite BLUE-WHITE is required.

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for use under strong acid conditions as in CARBONIZING or ACID FELTING of WOOL.

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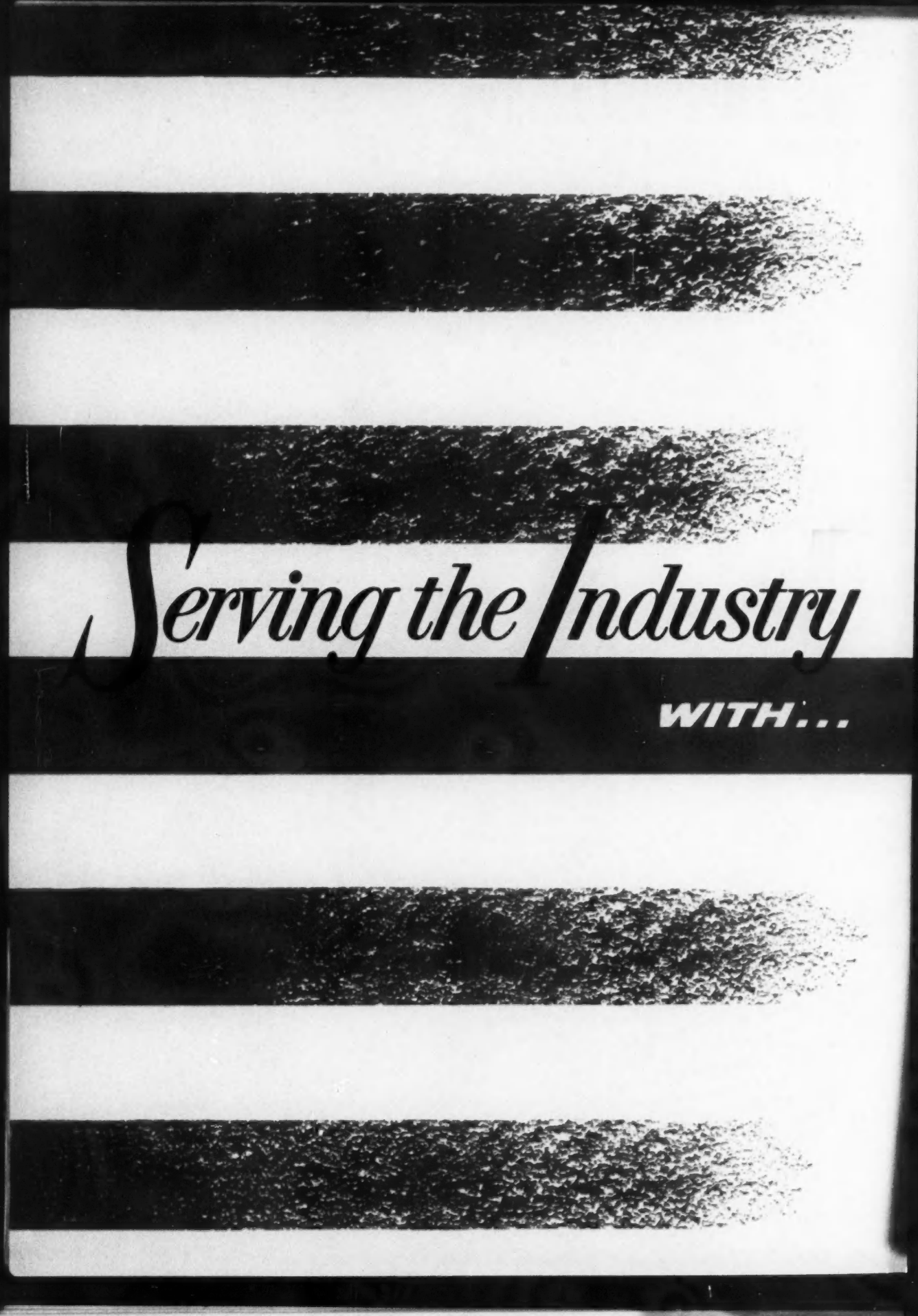
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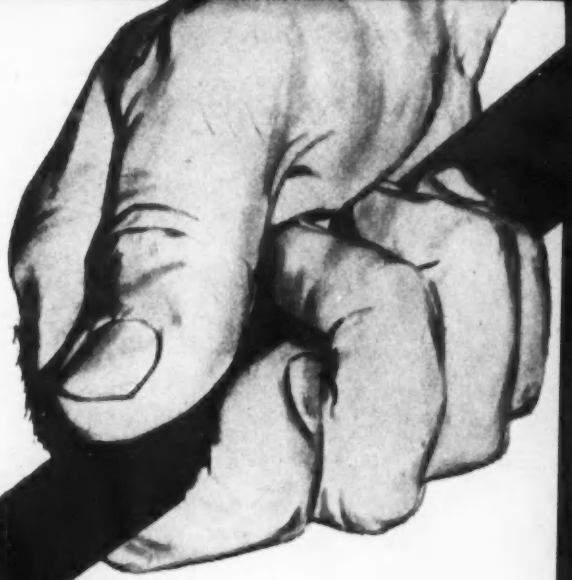

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2 A COMPLETE LINE. Only Van Vlaanderen offers you such a complete line of quality equipment for dyeing and finishing rayon, acetate and synthetic broadgoods, including their blends. From preparatory equipment to packaging machinery, there is a V. V. Machine that meets every need. Whether you require a single machine or a complete plant our engineers will be glad to work with you in specifying the best equipment for the job.

3 SUPERIOR DESIGN. We believe our engineering and design staff is second to none. V. V. has introduced many important improvements in processing machine design. The exclusive patented features of V. V. Machines contribute to their consistently better production, longer service and reduced down time. The 888 Jig, for example, has a special transmission using spur and miter gears for superior power transmission with less wear. The entire transmission may be replaced by a spare in less than 20 minutes.

4 SUPERIOR CONSTRUCTION. An important factor in the long life and low maintenance costs of V. V. equipment is the high quality construction methods used. Anti-friction bearings assure smooth, trouble-free operation. Massive cast iron frames and girts reduce destructive vibration and retain permanent alingment. Stainless-steel, bronze and special alloy steels control costly corrosion and wear. V. V. Machines are super powered. Motors specified are adequate for the severest use. V. V. Machines are built to last.

5 FIFTY YEARS EXPERIENCE. Over a half century of successful service to the industry, we think, is a pretty good recommendation in itself. Van Vlaanderen began building machines for silk processing in 1902 and has led in machine design ever since.

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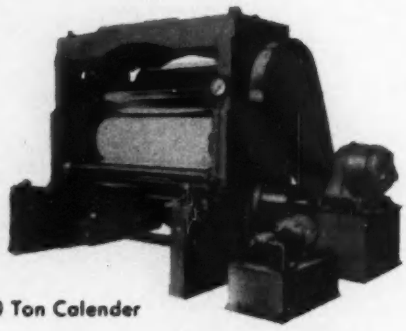
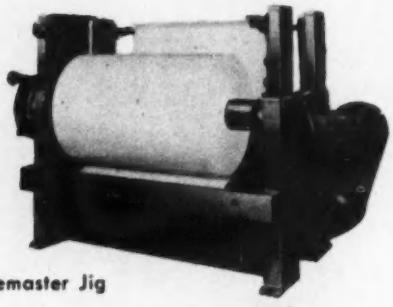
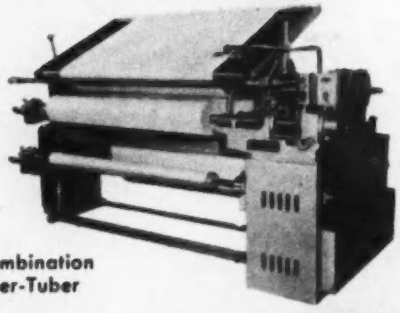


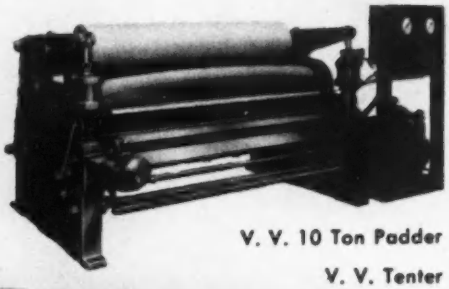
V. V. 80 Ton Calender



V. V. Dyemaster Jig



V. V. Combination Examiner-Tuber



V. V. 10 Ton Padder

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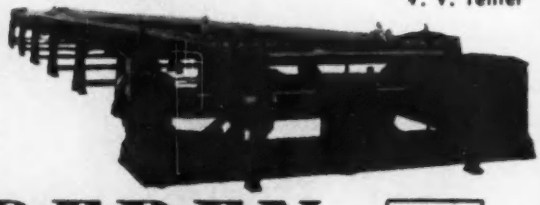

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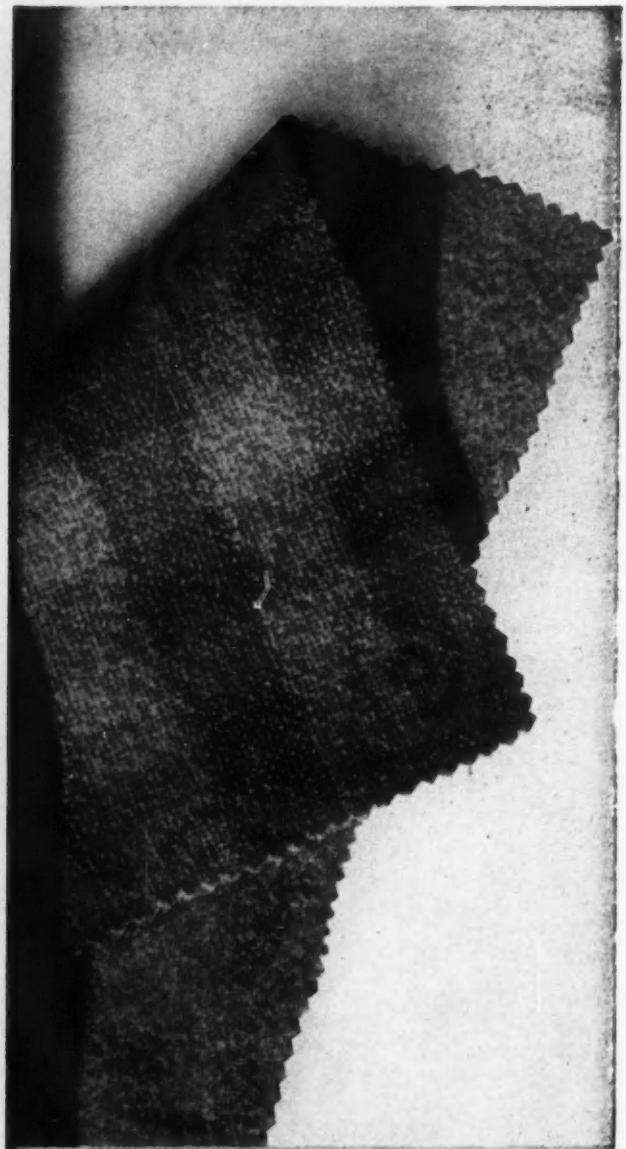

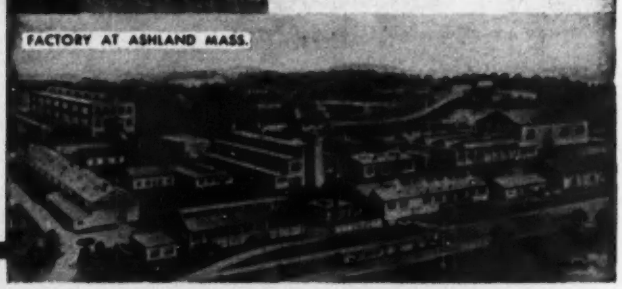

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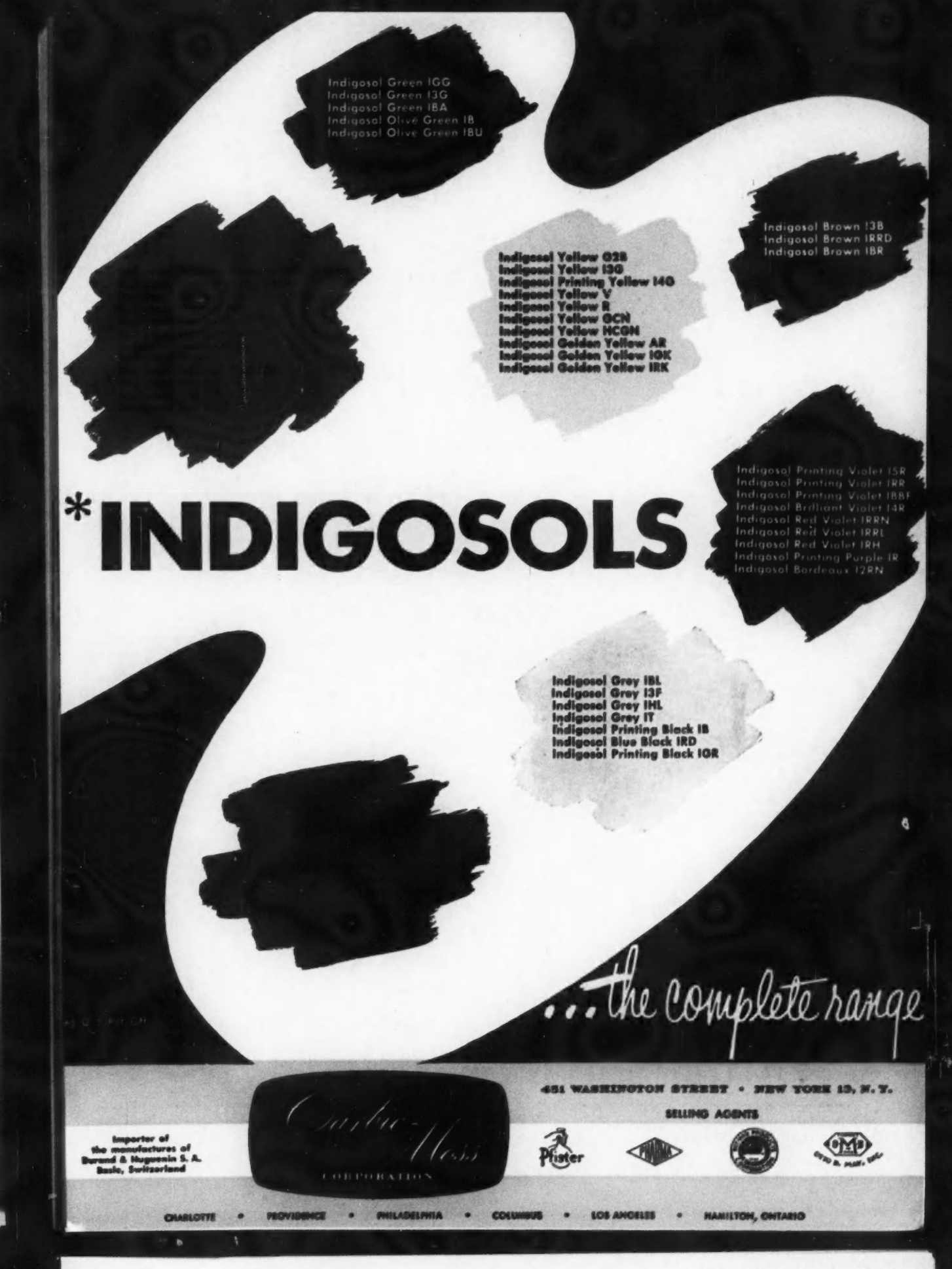
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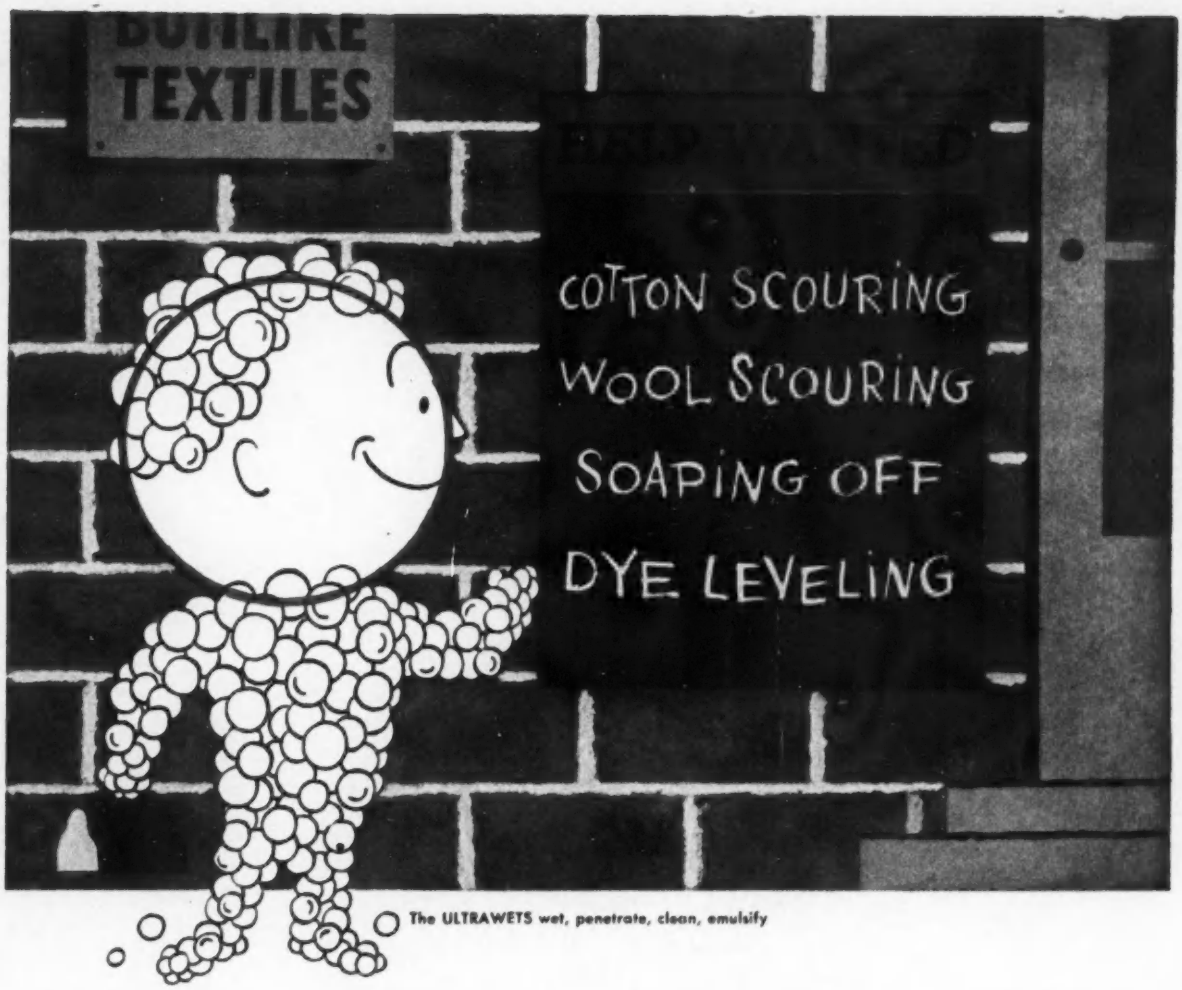

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GENERAL ANILINE COLORIST SAYS . . .

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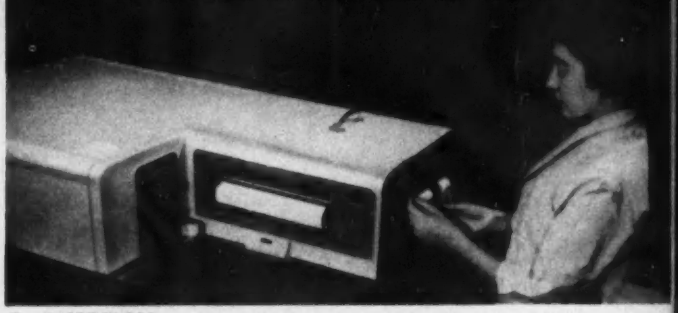
MATERIAL SAVINGS are assured because costly mismatching of dyestuffs is practically eliminated. The G-E spectrophotometer helps provide permanent color standards by furnishing a positive record of any color in quantitative terms of fundamental physical units.

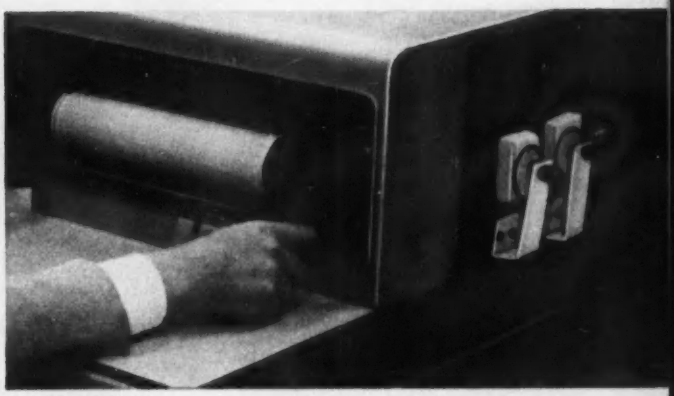
POSITIVE IDENTIFICATION is provided by General Electric spectrophotometers which have a range of 380 to 700 millimicrons*. Both transparent and opaque specimens may be analyzed. The instrument is simple to operate and is used as a double-check on the judgment of the colorist when multi-color-matching problems arise.

General Aniline achieves additional savings in time by using the automatic tristimulus integrator to calculate tristimulus values. Provided as an accessory to the

THREE SIMPLE STEPS



1. INSERTION of dyestuff sample and standard into G-E spectrophotometer is the first step in production-line color measurement. Samples may be either transparent or opaque.



2. SELECTION of recording speed is next. Operating automatically, the G-E instrument draws a complete spectrophotometric curve of the most complex dyestuffs in only 54 seconds.

3. ANALYSIS of curves determines any variations from standard and necessary corrections. The automatic tristimulus integrator saves up to 20 minutes per sample in analysis time.

Invaluable for the Dyestuffs"

G-E recording spectrophotometer, the integrator calculates the values automatically at the completion of the spectrophotometric curve. The numerical values are used to set up color tolerances, color standards, and color formulation.

FOR MORE INFORMATION, contact your nearest G-E Apparatus Sales Office, or write for Bulletin GEC-307 to General Electric, Section 585-16, Schenectady 5, New York.

*Special ranges can also be provided.

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SUPER-FOAMING?

NONE BETTER

no matter what your call is for

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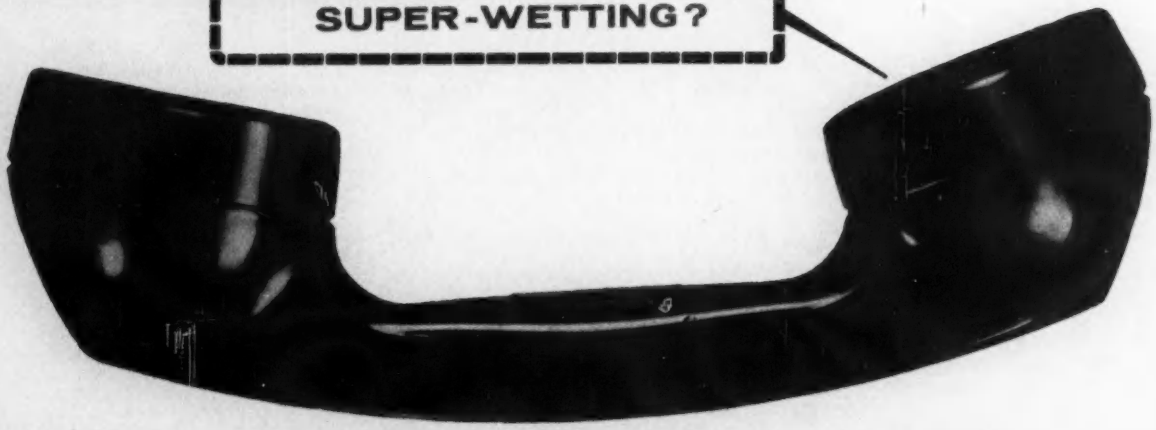
SUPER-ECONOMY?

the new super-

SUPER-WETTING?



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detergent for textile finishing

A standout performer for almost every quality detergency application since its recent introduction, SUPRONYX has proven itself in the formulation of both light and heavy duty detergents.

The unusual versatility of this most efficient modified sodium alkyl sulfate is coupled with its mild and neutral character, unimpaired foam stability, easy solubility, resistance to hard water, quick and thorough rinseability, gentle and non-irritating properties and important economy.

SUPRONYX has shown itself especially useful, effective and valuable in raw wool, worsted, knit goods, rayon and acetate scouring and cotton print washing and dyeing, among others.

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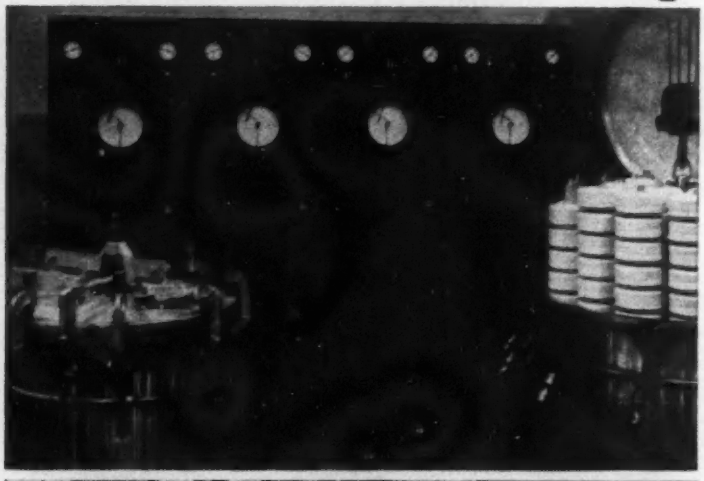
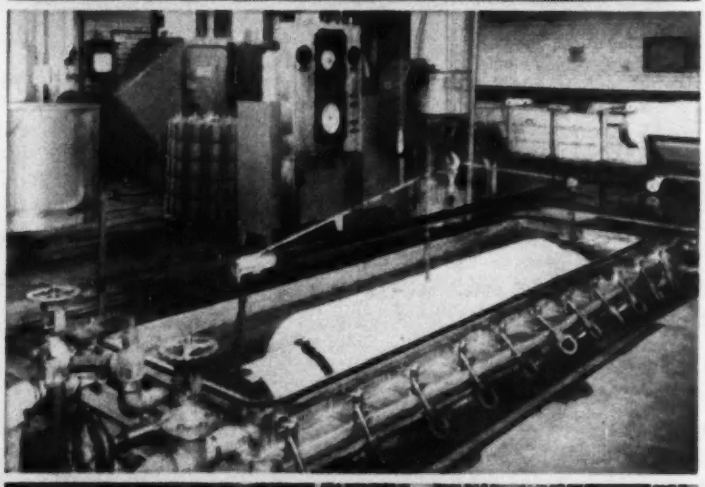
Taylor controlled dyeing

On These Package Dyeing Machines in a well-known New England Mill both the temperature and the time of the overall dyeing cycle are automatically regulated by Taylor FULSCOPE* Controllers and Process Timers. A dye liquor reversing valve, which gives a specific inside-out and outside-in cycle, is operated by a FLEX-O-TIMER* Time-Cycle Controller. This precisely times flow reversal, assuring greater uniformity.



New Pressure Bleach, Boil-off and Dye Machine is used on tricot and other knitted and open weave fabrics. Liquor is circulated at the rate of 1,500 gallons per minute, which makes precise temperature and pressure control all important. The Taylor control system eliminates the chances of human error, assures a uniformly dyed product, saves labor and permits a range of colors hitherto very difficult to obtain.



The Dyeing of Synthetics calls for extremely precise control of temperatures and dyeing cycles. The Taylor FULFLEX* Time Cycle Controllers shown here are performing so satisfactorily that the president of the Eastern mill in which they are installed says: ". . . without Taylor controls we could not otherwise maintain the accurate and precise control which is so necessary in our operations."

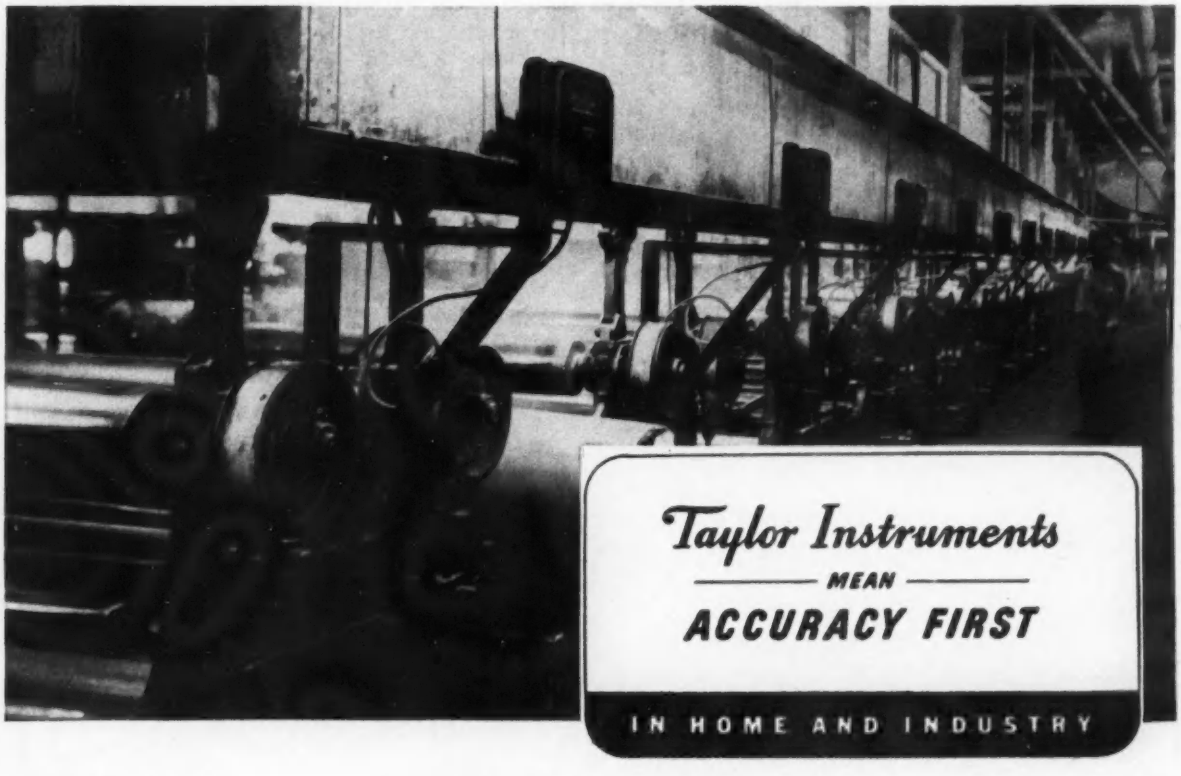
*Trade Mark

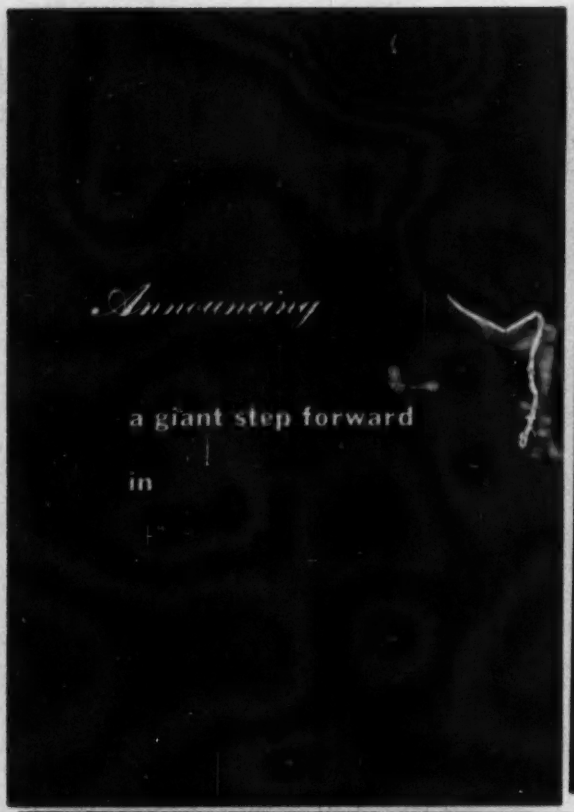
means quality dyeing!

1 Save steam
2 Achieve uniformity
3 Cut down on re-processing
4 Increase production

For Pressure Dyeing, Piece Dyeing, Jig Dyeing, Package Dyeing, Pad Dyeing or any type of wet finishing, there's a Taylor control system that will help you cut costs and maintain quality. And Taylor Field Engineers stand ready, willing and able to help you decide on the right instrumentation for your particular needs. Why not give your local Taylor man a call today? Taylor Instrument Companies, Rochester, N.Y., or Toronto, Canada.

Dye Jig operating costs have been cut, production and efficiency have been increased, thanks to the Taylor control system illustrated below. The Indicating Temperature Controller automatically maintains uniform dye liquor temperature, regardless of wide variations in steam pressure in the header. Automatic throttling control maintains an even steam temperature with no overpeaking, resulting in big steam savings.





KELTEX S

liminates buffers!

Improves compatibility!

Better stability!

Sharper mark!

Greater economy!

TEST PROVE remarkable new **KELTEX S,** especially developed to give unmatched performance even in strongly alkaline print pastes without the use of caustic buffers or sequestering agents.

Unusually effective as a surface printing gum, **KELTEX S** gives improved color yield, particularly with Rapidogens, Pharmasols and Diagens—effective too with Acid, Direct and Acetate dyestuffs.

KELTEX S, produced from domestic sources, is manufactured to absolutely uniform standards by a control procedure which includes forty-six distinct tests.

KELTEX S®
a product of KELCO company

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530 W. Sixth Street, Los Angeles 14, Calif.
Cable address: Kelcoalgin — New York

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We're proud of what's coming out of this plant, and you will be, too. We are meeting head-on the changing trends in new fibers, creating the tools that will help you chalk up new developments in a tight industry.

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Don't have to tell you what our WICA resins will do to boost the value of your tags. Customer faith in those tags is like money in the bank. Wica Chemicals, Inc., Old Concord Road, Charlotte, N. C.

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VAT DYES
"MICROFINED"*
for improved performance have established a new standard of quality on the American market.
The physical condition of these superior vat dyes exemplified by superfine and uniform particle size and perfection of dispersion is translatable into added money value under plant conditions trouble free continuous runs reduction of specking on light-colordd goods better penetration of tightly woven materials fewer seconds more profit.
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Particularly effective as a reducing, bleaching antichlor or neutralizing agent of highest quality.

Tennessee's Liquid Sulfur Dioxide is practically 100% pure . . . Easy to transport, store and handle.

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We solicit the opportunity of discussing this with you.

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First to Combine Ribbon Finish and Water Repellent

Into a Single Product...
for a Single Application

Repco RF, Jersey State's new resin finish, successfully combines both water repellent and ribbon finish into a single product—to produce a *superior* finish.

And Repco RF need not be cured—*dries at normal drying temperature.* It provides a good firm hand, improved lustre and completely eliminates mark-off. It will *pay* you to look into Repco RF before you finish another yard!

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JERSEY STATE CHEMICAL CO.

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Here's a powerful new program to make your selling job easier

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AVISCO®

Now your customers need remember just one name for products made with American Viscose Corporation materials. That name is Avisco, and it will supplant four names that have signified highest standards. The standards remain the same but

The name Tufton in carpeting becomes Avisco

The name Avcoset in washable rayon fabrics becomes Avisco

The name Tricale in sheets becomes Avisco

(And the name Sylvania in cellophane becomes Avisco)

Fine products in home furnishings, fashion and industry, known by the single name, Avisco, will be easier for your customers to identify, easier for you to promote, easier for you to sell.

American Viscose Corporation, 350 5th Ave., New York 1, N. Y.

AVISCO—the name, the goal,

one goal · one theme

To safeguard highest quality

To insure public regard for the Avisco name as a synonym for quality wherever it appears, a firm program of simple standards has been established. Products which meet or exceed these minimum standards of the American Viscose Corporation will be awarded the Avisco Integrity Tag.

In carpeting this means high-quality merchandise through strict control of pile fiber, pile weight and density, color-fastness, and construction.

In men's and women's apparel this means better washability, color-fastness, soil resistance, wrinkle resistance, and durability.

In sheets this means firm standards for performance in washability, wearability, and consistent resistance to shrinkage.

A unified advertising program to consumers

All Avisco's advertising dollars for *all* products will work toward one end. Launching this new streamlined program will be a series of powerful advertising campaigns to build public confidence, public preference for products that bear the Avisco name. First in the series:

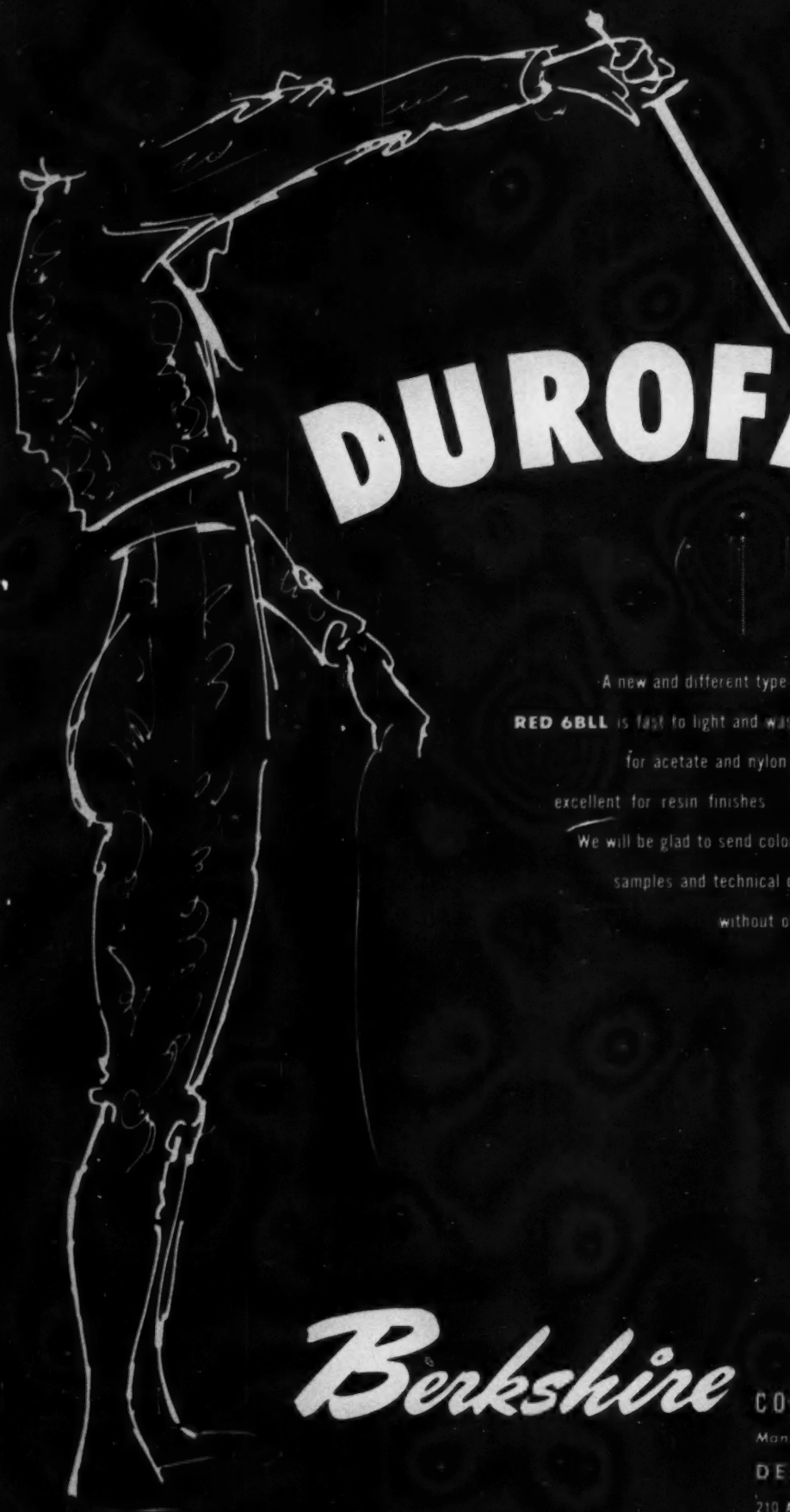
Luxury shirts look new, after dozens of washings
Avisco is the reason

Enjoy guest-room sheets every night at everyday prices
Avisco is the reason

Twice as much fine carpeting for your money
Avisco is the reason

Striking four-color advertisements in *Life*, *The Saturday Evening Post*, *Fortune*, *Business Week*, *Vogue*, *Harper's Bazaar* will tell the Avisco story. Millions of readers will learn what Avisco means in economy, durability, soil resistance, beauty, ease of maintenance and, above all, *dependable* quality. Millions of viewers of "Home," the national TV show featuring Arlene Francis, will know that "Avisco is the reason" for the wonderful things that are happening to rayon and acetate.

the theme will give new vigor to your rayon and acetate business



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A new and different type—**DUROFAST RED 6BLL** is fast to light and washing, useful for acetate and nylon reserves. It is also excellent for resin finishes.

We will be glad to send color cards, samples and technical data without obligation.

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75,000 reasons why Butterworth is headquarters for Cylinder Dryers . . . . . .

Butterworth's Drying Machinery Division has made more drying cylinders than all other manufacturers combined — 75,000 as of recent count. It is not a mass production operation. Butterworth has $160,000 of pressure vessel fabricating equipment. All cylinders are made from certified materials and inspected at every stage to make sure they provide greater drying capacity per dollar.

Each Butterworth installation is planned for its specific job . . . engineered for the weight of cloth, degree of moisture content, and dryness desired. And every Butterworth Cylinder is backed by the Butterworth service organization.

Your choice of copper or stainless steel cylinders . . . fabricated or cast-iron columns . . . vertical or horizontal arrangement . . . V-belt, gear or sprocket-and-chain drive. And Butterworth's new seam-welding technique gives a weld so fine it can't be seen with the naked eye!

If your mill needs increased drying capacity, lower drying cost, call in a Butterworth engineer for facts and figures on new Butterworth Dryers. No obligation of course.

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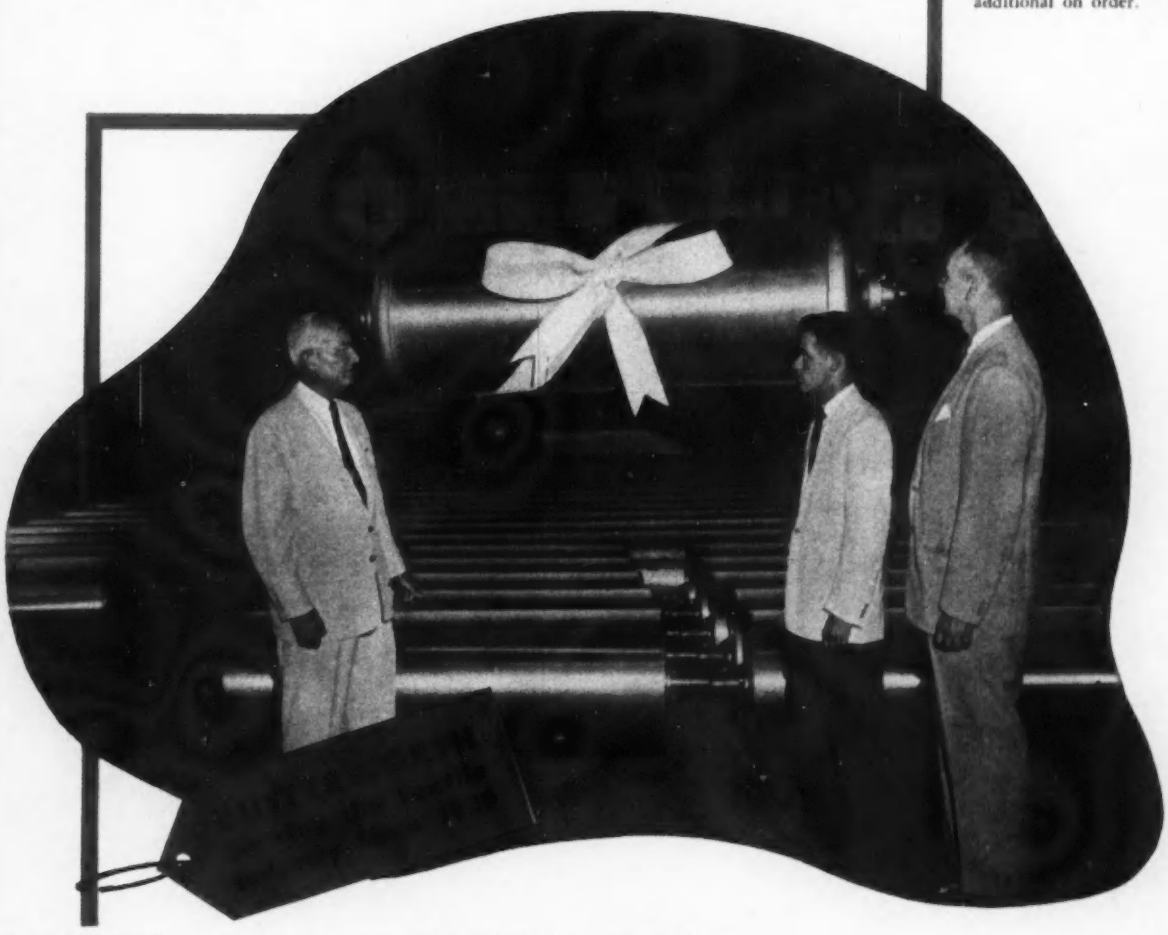
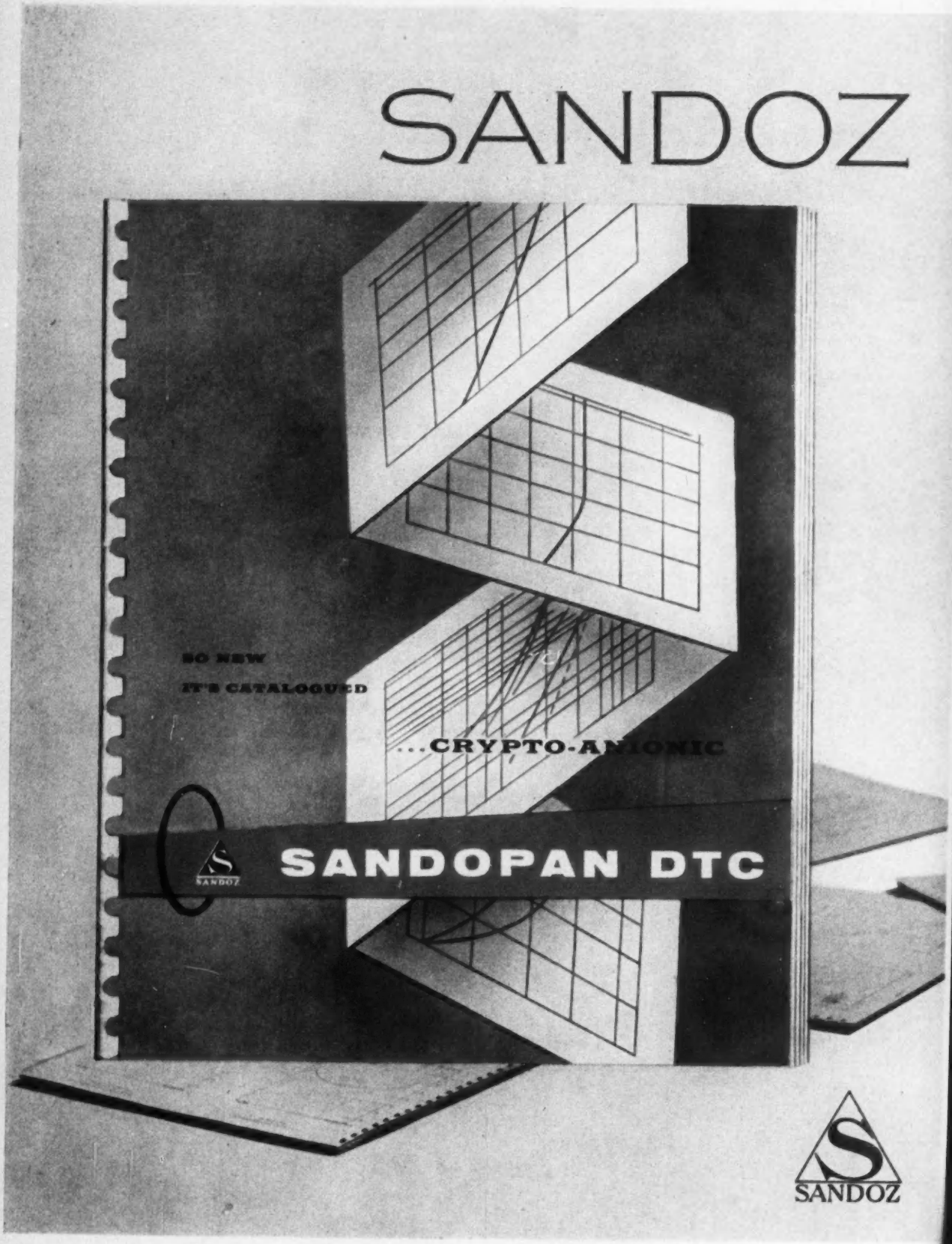
Machines for Bleaching, Boiling-Out, Dyeing, Mercerizing, Finishing & Embossing—Pot Spinning Machines for Synthetic Fibers : : Calender Rolls : : Tenter Chains



Carl Schmidt, Jr. of J. P. Stevens Co., Clemson, S. C., receives Drying Cylinder No. 75,000 made by Butterworth. Others shown are Vice-President De Haven Butterworth (left) and President J. Ebert Butterworth. J. P. Stevens Co. plants now have 389 Butterworth Drying Cylinders with 50 additional on order.

SANDOZ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IT'S CATALOGUED
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announces a revolutionary new surfactant Crypto-anionic SANDOPAN DTC

A striking advance in the soap and detergent industry...

SANDOPAN DTC combines the most favorable characteristics of anionic soap with the best properties of nonionic detergents and eliminates the disadvantages of either.

SANDOPAN DTC offers you excellent stability, remarkable wetting properties and detergency.

Let us prove to you how SANDOPAN DTC:

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- *steps up your bleaching efficiency*
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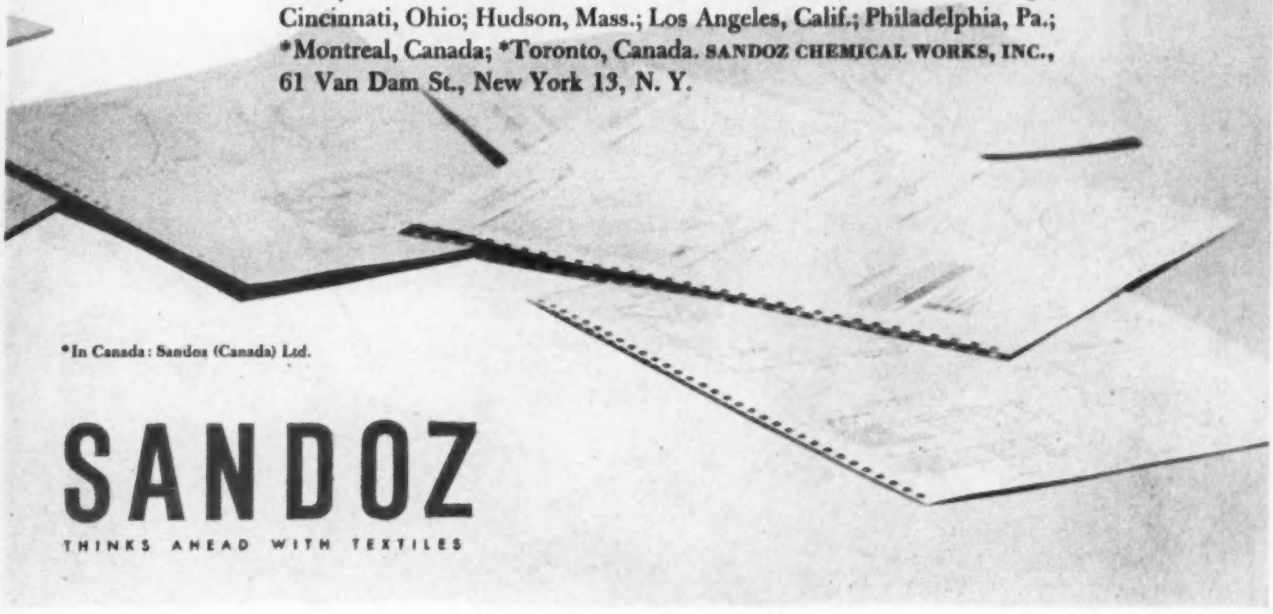
- *raises abrasion resistance of your resin finished goods*

Call your local Sandoz office: Charlotte, N. C.; Fair Lawn, N. J.; Cincinnati, Ohio; Hudson, Mass.; Los Angeles, Calif.; Philadelphia, Pa.; *Montreal, Canada; *Toronto, Canada. SANDOZ CHEMICAL WORKS, INC., 61 Van Dam St., New York 13, N. Y.



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Prym-Avcoset finished fabrics

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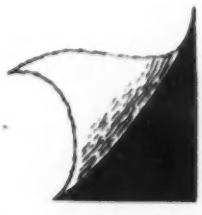
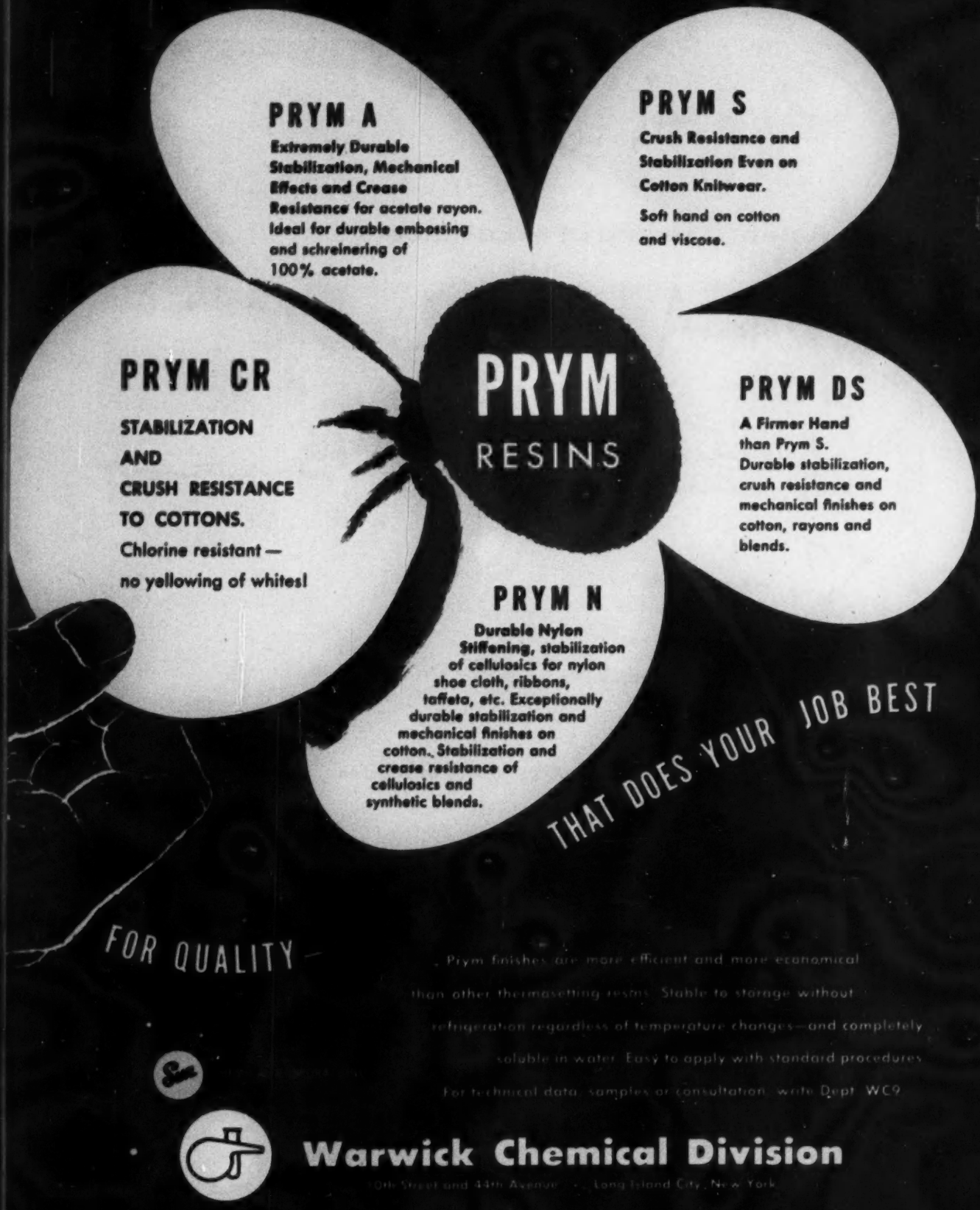
AVISCO INTEGRITY IDENTIFICATION

Turn the page to get the complete PRYM® story . . .

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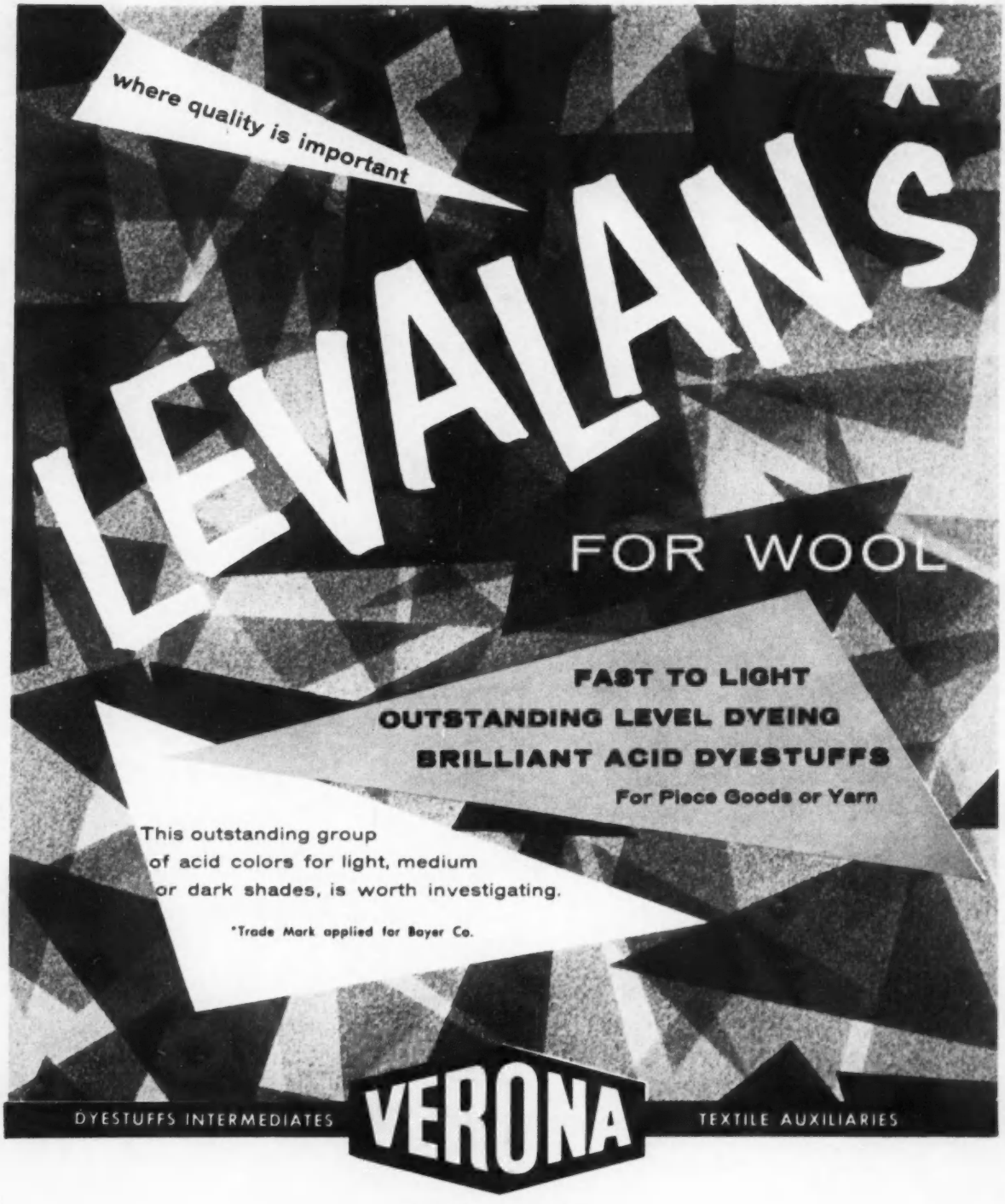

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A DIVISION OF VERONA CHEMICAL CO.

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New! Atlantic Printing Black 2B Powder

Patent Applied For

A Stabilized Azoic

A full, deep, economical shade for use alone or in combination with other printing colors, vat colors, pigments and soluble vats.

- **Wash Fast**
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Manufacturers of Coal-Tar Intermediates and Dyestuffs

Executive Offices: Passaic, N.J.

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Stocks Maintained at Providence, Rhode Island; Nutley, New Jersey; Greenville, South Carolina and Macon, Georgia.

CABLE ADDRESS: "ANILDYE-PASSAIC"

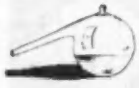
You can control UNIFORMITY when you use Houghton Textile Processing Products

FOR COTTONS

Houghto-Size sizing compounds . . . concentrated . . . provide high weave room efficiency. For slicker warps with excellent fiber lay, also use Houghto-Wax in the size kettle.

FOR WOOLENS

SuMol 448, non-ionic stock lubricant for woolens and worsteds—minimizes static—is odorless, non-staining, non-corrosive. Also Lanolubric wool oils, well known for over half a century for their dependable performance.



FOR SYNTHETICS

Raylubric oils for softening, soaking and throwing rayon and synthetic fibers.

For scouring and wetting applications, remember these Houghton surface active agents:

CERFAK . . . the trade name to specify when *detergency* is the chief factor you want.

SURFAX . . . selected whenever exceptionally good *wetting* and *re-wetting* power is needed.

Ask your Houghton Man for full information or write E. F. Houghton & Co., Philadelphia 33, Pa.

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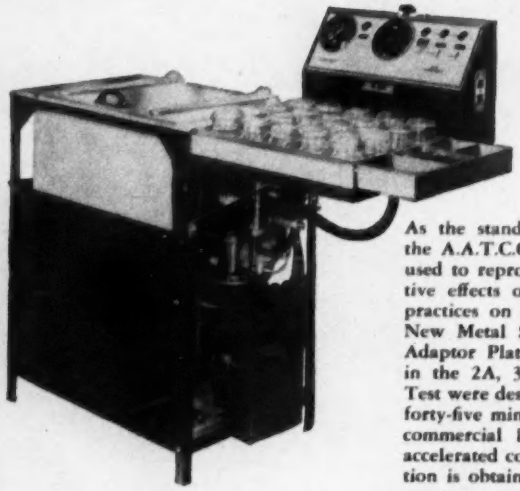
Ready to give you on-the-job service . . .

ATLAS-OMETERS

for more than 25 years the textile industry's standard machines for testing



★ color fastness
★ shrinkage
★ detergency
★ bleeding
★ resistance to mechanical action, etc.

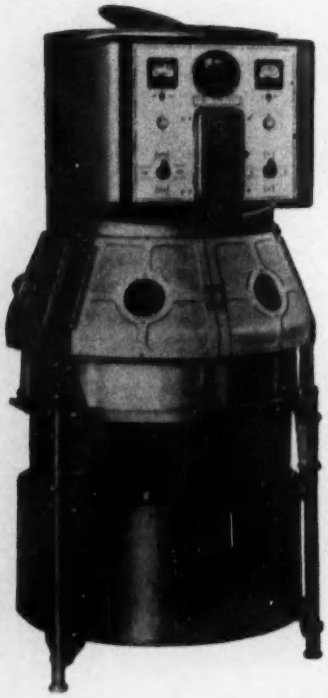
LAUNDER-OMETERS

As the standard washing machine of the A.A.T.C.C., the Launder-Ometer is used to reproduce quickly the destructive effects of commercial laundering practices on all types of fabrics. The New Metal Specimen Containers and Adaptor Plates now available for use in the 2A, 3A, and 4A Washfastness Test were designed to reproduce in one forty-five minute test the effects of five commercial launderings. Under these accelerated conditions, factual information is obtained that enables manufacturers to accurately predict color fastness to soaps and detergents, and resistance to bleeding, shrinking, washing and mechanical action. In addition, the Launder-Ometer is used for dyeing tests at boiling point.

Precision controls in the Launder-Ometer permit careful regulation of all factors, and identical reproduction of tests whenever desired. With its big capacity, the machine permits as many as 20 tests to be run simultaneously. The Atlas Pre-heating Loading Table—standard equipment on Launder-Ometers—makes it possible to start all tests at the same temperature, for greater accuracy. Mechanical action is provided by the introduction of stainless steel spheres into each container.

Located behind the Pre-heating Table, at the most convenient height, is the modern control cabinet housing all switches, pilot lights, indicating and control instruments, and direct-reading dial type thermometer. Launder-Ometers are available for use with electricity, steam, gas, or both electricity and steam for heating the water bath.

In the Launder-Ometer, all sheet metal parts coming into direct contact with water, including the test chamber and cover, and pre-heating loading table are constructed of stainless steel for permanent resistance to corrosion.



FADE-OMETERS

The Fade-Ometer brings under laboratory control the deteriorating action of sunlight on any material or type of finish. Used primarily to measure the light fastness of colors, the Fade-Ometer is also used to determine other photochemical changes caused by exposure to sunlight.

In making tests, samples in masked holders are rotated around an Atlas Carbon Arc — the closest approach to natural sunlight — at a fixed distance from the arc and at a constant speed in order to assure equal distribution of light to each sample. Upper and lower suspension rings keep samples in proper vertical alignment. Color fastness is measured in terms of Standard Fading Hours, using new calibration paper.

Operation of the Fade-Ometer is fully automatic. The simple, but complete control panel includes voltmeter, ammeter, running time meter, time switch, thermo-regulator, pilot lights and switches, which serve to keep all variable factors — time, temperature, and light — under accurate control.

The Fade-Ometer may safely be left in continuous operation overnight. It is furnished with water pan and specimen holders constructed of stainless steel and with a wide variety of sample holders and exposure masks.

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New AATCC developed instrument for rapid evaluation of wet and dry abrasion qualities of textiles.

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Standard machine for testing damage caused by retained chlorine. AATCC Tenative Test Method 69-52.

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UNHEARD-OF COST REDUCTION—**The Pennolox process saves you at least ⅓ of the initial cost of chemicals alone; and savings pile up all along the way in lower fuel bills, less time required in the bleach operation.**

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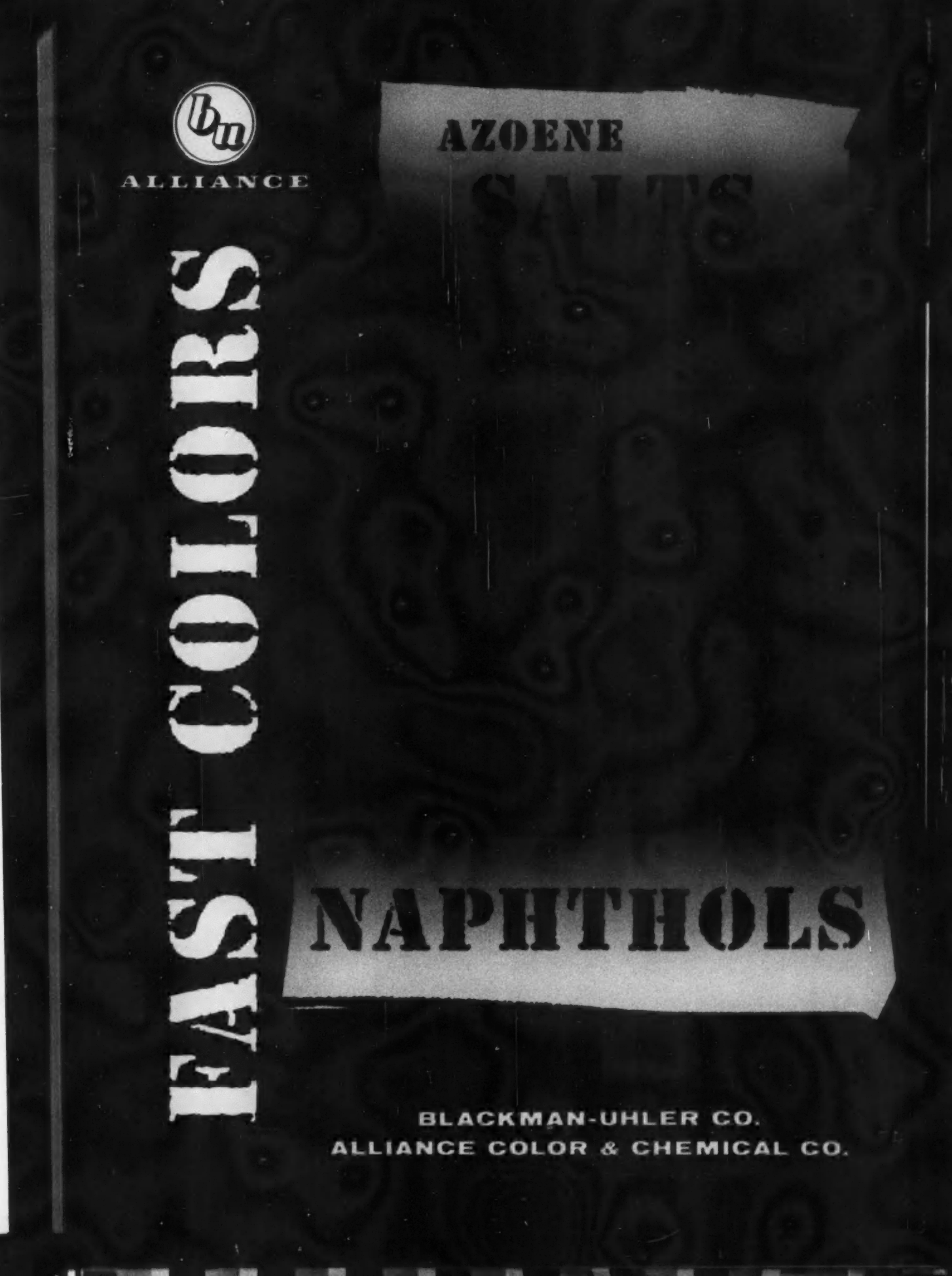
*PENNOLOX, NEUTROLOX, AND SUNOLOX ARE TRADEMARKS OF PENNSYLVANIA SALT MFG. CO.

Pennsalt Chemicals

PENNSYLVANIA SALT MANUFACTURING COMPANY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A non-ionic compound that gives all yarns a softer "hand" . . . more sales appeal. Highly recommended for use in starch and resin finishes . . . does not cause yellowing at high temperatures or develop odors during aging. Effectively imparts softness and lubricity to the yarns. Effective anti-static agent.
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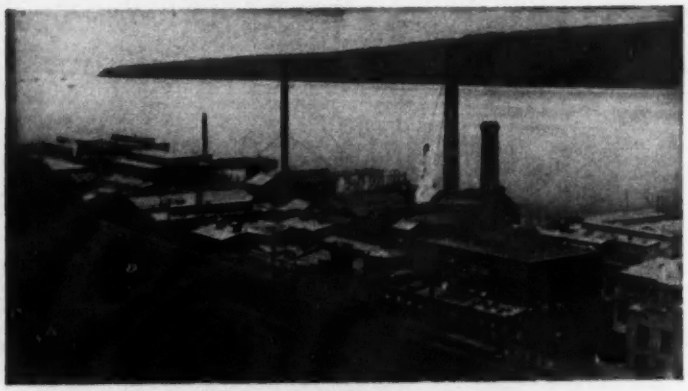

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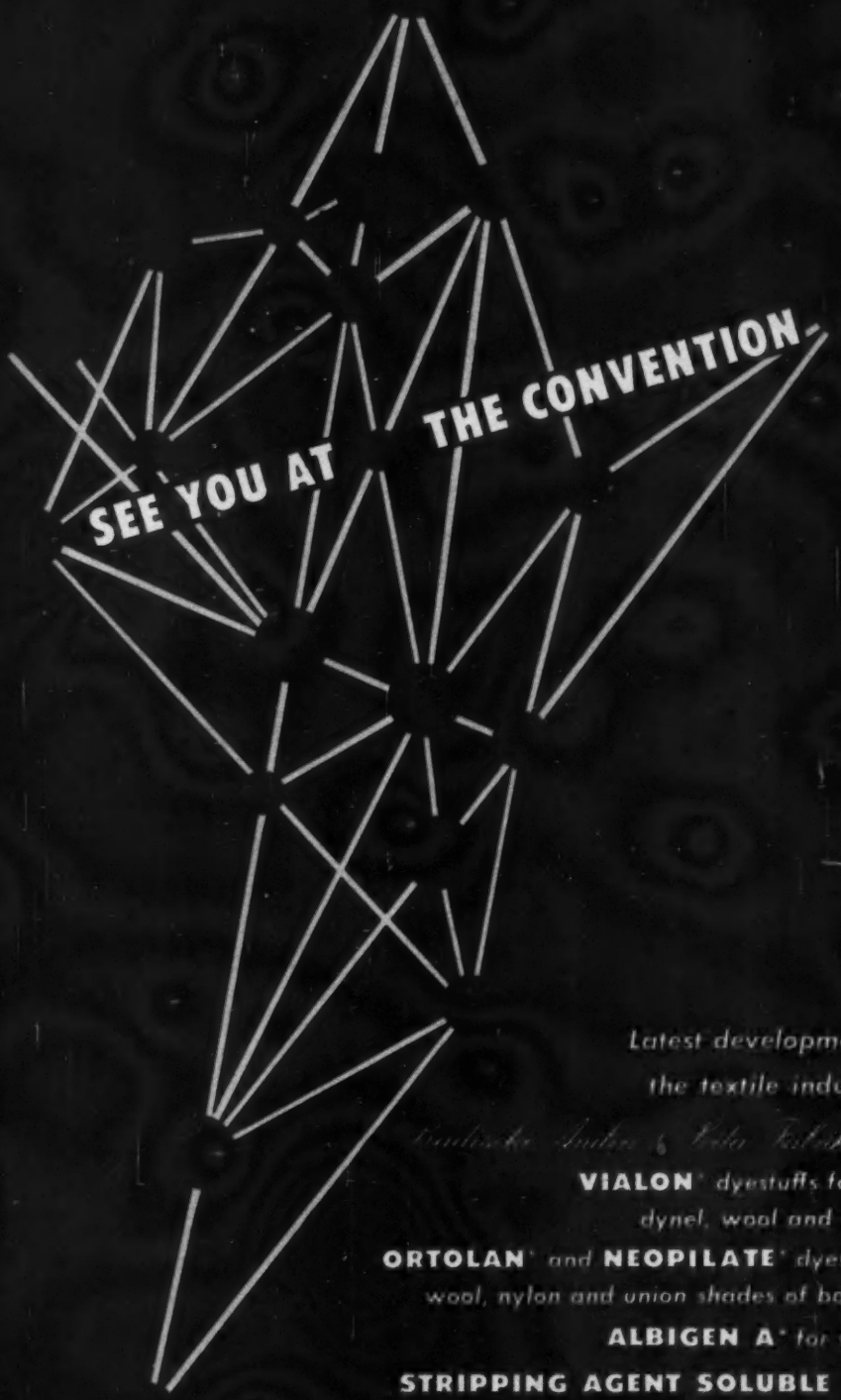

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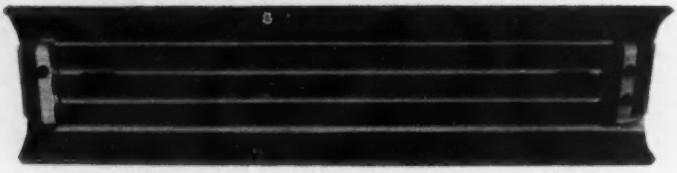

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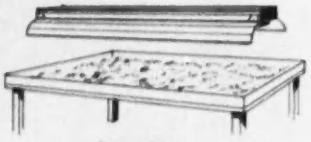
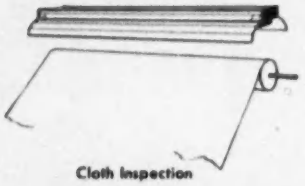


Cotton Fibre



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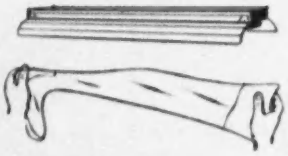

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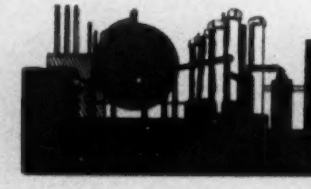

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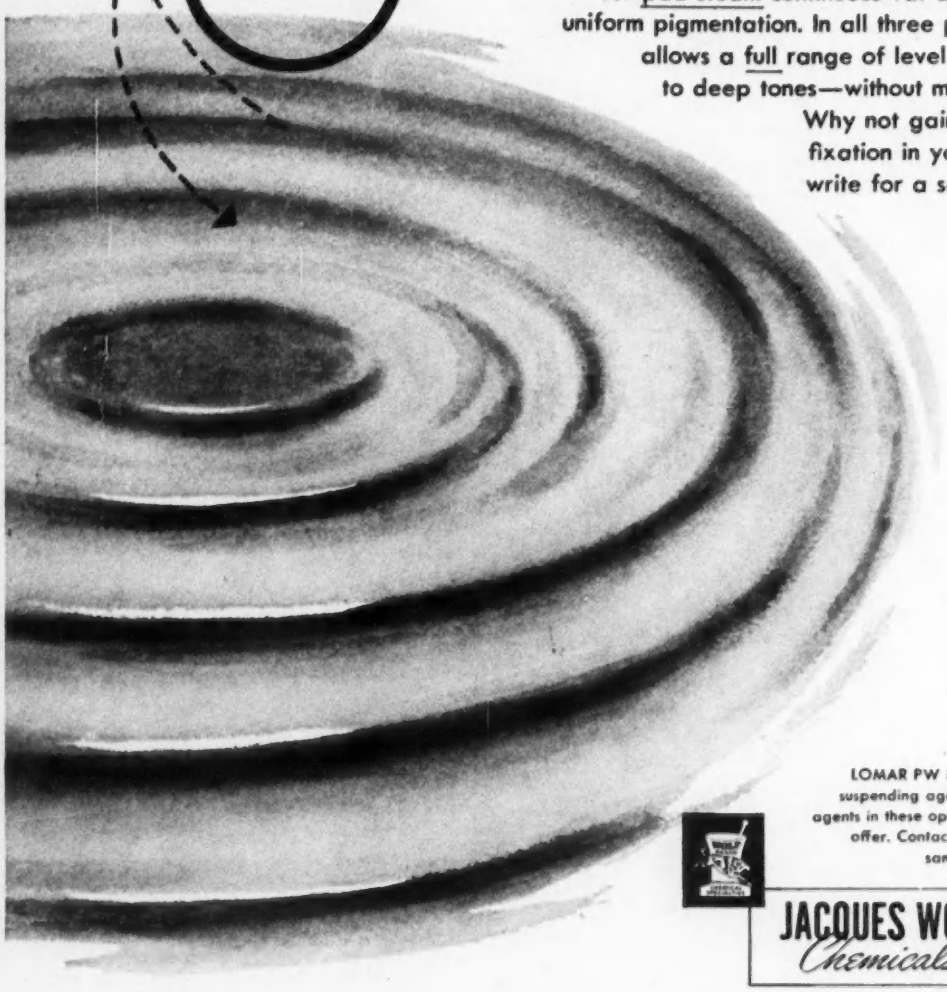

LOMAR PW is recommended as a successful suspending agent. For those who add wetting agents in these operations, we have a full line to offer. Contact Jacques Wolf today for your sample and complete information.

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spotlight on

oxidation resistance
in stearic acid

how Emersol 120 decreased yellowing and rancidity of textile softeners

If rancidity and yellowing are problems in your product, then you may profit from this actual experience:

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Your use of Emersol 120 Standard with its outstanding color stability, resistance to rancidity, and oxidation stability, will make your product more appealing, stay appealing longer, and easier to sell. And since it costs no more than competitive double-pressed grades, all these extras cost you nothing. So...next time buy Emersol 120 Standard.

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...with Foxboro Conductivity Method of Control

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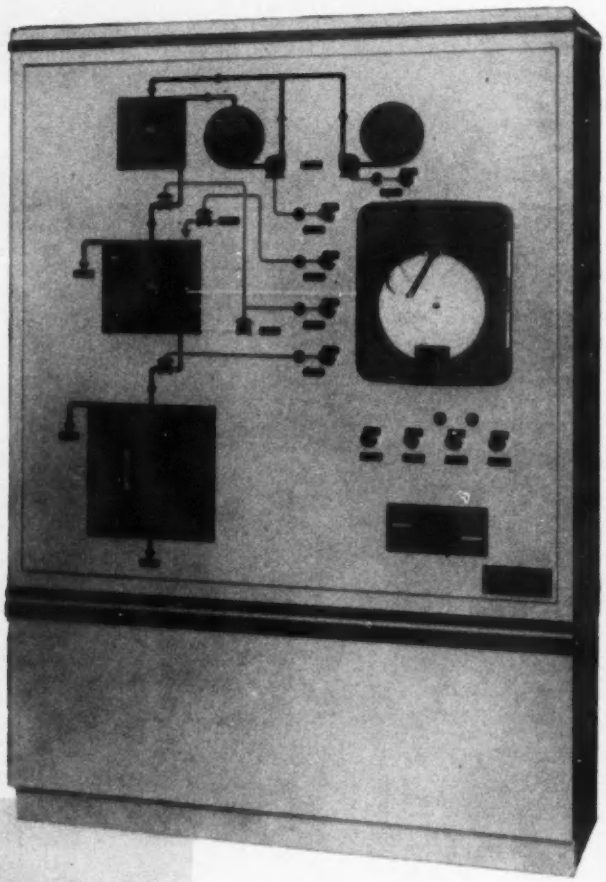
The Foxboro Conductivity Method of Control has been the economical answer to solution concentration problems throughout the textile industry . . . in souring, bleaching, carbonizing, and other operations. Find out how this modern method can save you money. Write for full details. **The Foxboro Company, 158 Norfolk St., Foxboro, Mass., U.S.A.**



Compact Control Cabinet located on another floor from the "cutting" tank shows every stage of the process graphically in color on the panel . . . warns of abnormal conditions. Note level gauge in bottom storage tank in panel diagram.

The "cutting" tank in which commercial 66° Be acid is diluted to desired concentration. Note conductivity cell (next to level probes), air mixing, water and acid feed lines. (This is middle tank in flow diagram on cabinet panel.)

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FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

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PLANTS: Harrison, N. J.
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Many companies often make extravagant claims for their wool oils. Nopco doesn't believe in extravagant claims. But if you are one of the many woolen manufacturers who have been assuming that static is something you just have to live with—since you can't eliminate it economically—we're sure you have everything to gain by trying our new wool oil, Nopcostat 56-C.

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Use this efficient—time proven—emulsion combination from your winder emulsion troughs and profit from a new high in quality, luster and softness. HYDROCOP and 3B SOFTENER will help you to obtain increased production of smooth, more even running, more easily knit yarns. **HYDROCOP** and **3B SOFTENER** speed up the conditioning of greige, dyed or bleached yarns; cotton; woolen, worsted and cashmere; orlon; nylon; rayon and blends.
Produced from first-quality vegetable oils and non-mineral waxes which insure dependable performance, HYDROCOP and 3B SOFTENER are highly resistant to aging and discoloration, and do not cause shade change.
CHENILLE YARNS—Hydrocop—used with Mildant RX—will produce perfectly conditioned, smooth running, mildew resistant chenille yarns.

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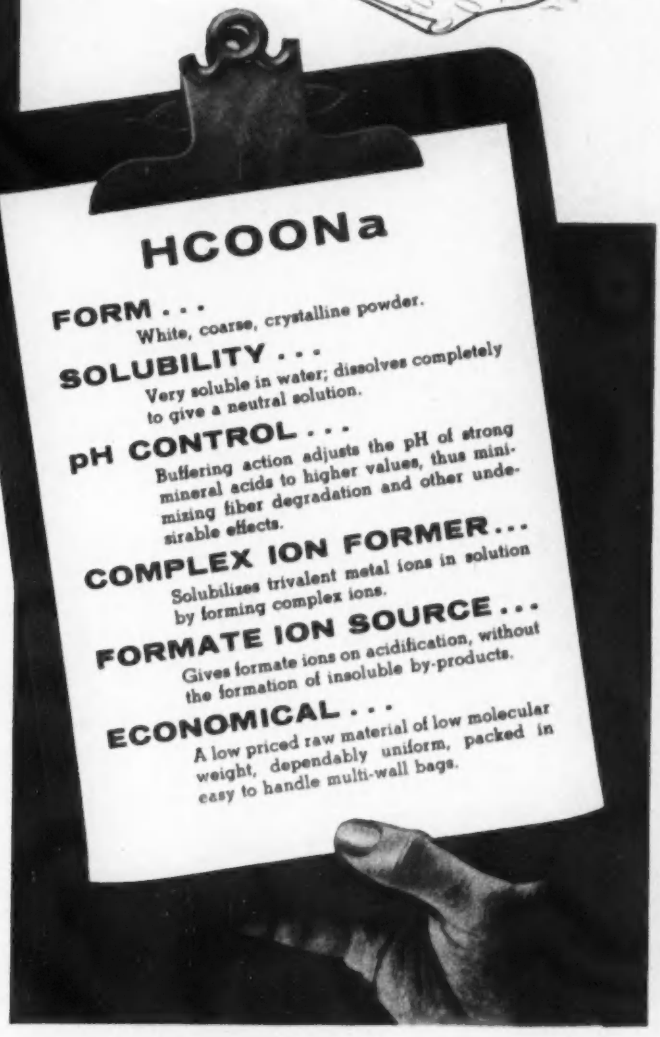
Can these features of Heyden help your process?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Buffering action adjusts the pH of strong mineral acids to higher values, thus minimizing fiber degradation and other undesirable effects.
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Gives formate ions on acidification, without the formation of insoluble by-products.
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A low priced raw material of low molecular weight, dependably uniform, packed in easy to handle multi-wall bags.

Sodium Formate finds widespread use in the chrome tanning of leather, water-proofing of wallpaper, dyeing of carbonized wool and other materials, acidizing of oil wells, nickel plating, blueprint developers, and as an intermediate and dehydrating catalyst in the synthesis of organic chemicals.

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A uniform product of high quality used in the dyeing and finishing of textiles, the tanning and dyeing of leather, for coagulating rubber, and as a raw material for the manufacture of drugs, odorants, fumigants, catalysts, plasticizers, and water-proofing compounds. Shipped in 525 lb. stainless steel drums and 125 lb. carboys. Technical bulletin available.

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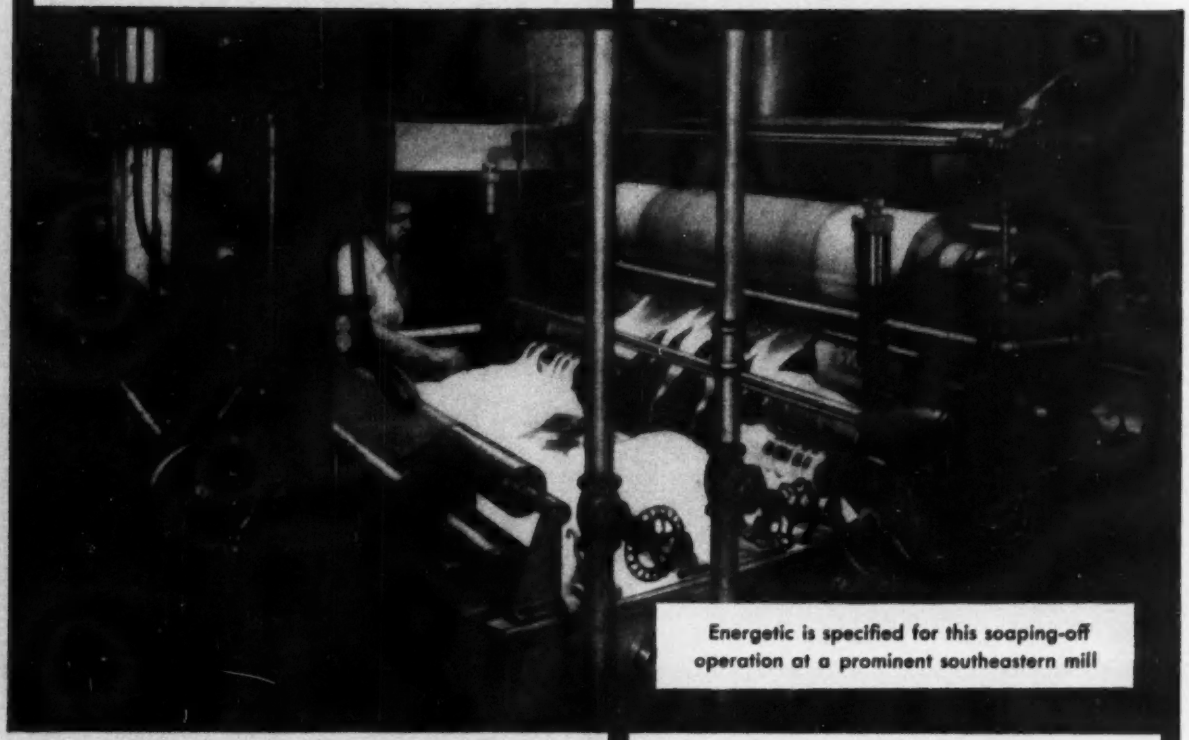
Armour Energetic* pays off where you soap-off...

with sharper, clearer prints!



Energetic is specified for this soaping-off operation at a prominent southeastern mill

Soap-off with powerful Energetic and watch the prints roll out! They'll be extra sharp and clear with clean, bright grounds—just the kind buyers want. Use Energetic for maximum detergency and economy in bleaching and dyeing processes, too. The manager of one the nation's largest mills reports that Energetic is the *only* synthetic which could solve his crocking problem on naphthol-dyed yarn.

A powerful, concentrated nonionic synthetic detergent, Energetic is supplied 90% *active*—it takes only one pound to do the work of 3 full pounds of anionics. This adds up to a savings per job of about 21¢ with every pound of Energetic you use. Add builders to cut costs even more.

Send the coupon for test samples of Energetic. Or, for quick delivery on a 5-gallon trial drum, place an order in the coupon at right. And send for booklets on Energetic and its two companion products—Energetic S and Energetic W-100. All three save time, money and material!

Energetic—Versatile, economical and so efficient you need use only ½ as much as anionics for maximum detergency.

Energetic S—Designed for use with solvents—gives outstanding results in boiling off synthetic fibers, hosiery finishing and desizing cotton.

Energetic W-100—A new instant-wetting agent which speeds up wet processing all through the mill.

FREE SAMPLE AND TRIAL ORDER BLANK

Armour Industrial Soap Department
Armour and Company, 1355 W. 31st St., Chicago 9, Illinois

Please send me:

☐ FREE Sample of ENERGETIC ☐ S ☐ W-100

.....5-gallon drums of ENERGETIC, $13.86 each

☐ Free Booklet, ENERGETIC and ENERGETIC S

☐ Free Booklet, ENERGETIC W-100

☐ Bill me ☐ Check enclosed ☐ Money Order

Your money back if not completely satisfied. For refund, ship unused portion.

Name ..... Title .....

Firm .....

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City ..... Zone ..... State .....

ARMOUR *Soap Division*
INDUSTRIAL SOAP DEPARTMENT

fastest colors

under the sun

and under the suds

for all fibers and blends

they're new!

belle fast

*means ULTRA fast**

colors for cotton and viscose

Write for complete information.
Our technical service is available at all times.

BELLE COLORS

Belle Chemical Company, Inc. / Reading, Pennsylvania / Charlotte, North Carolina

*when aftertreated with Bellefix CN or Bellefix VS

Let Our Resin Chemists Formulate a Polyvinyl Acetate Finish For Your Specific Needs

Morningstar Scientific Textile Service has developed and perfected a remarkable group of Polyvinyl Acetate Finishes based on new Emulsions produced by our Paisley Division. These improved Emulsions can now consistently give you one or more of these superior advantages . .

1. CLARITY OF FILM
2. ANY DEGREE OF FULLNESS
3. ANY DEGREE OF STIFFNESS
4. COMPATIBILITY WITH DEXTRINES, STARCHES, RESINS AND SOFTENERS
5. STABILITY OF DILUTION
6. VARIATIONS OF VISCOSITY

More and more textile mills are using our unusual skills and extensive scientific facilities. You, too, are invited to submit your problems to our capable staff. Just send along complete information and samples. We'll promptly analyze your data and recommend the ONE *best* product or method for the specific operation you describe. No cost or obligation is involved. Write today!

SEND FOR THIS FREE LABORATORY REPORT

A wealth of valuable technical data and information concerning Polyvinyl Acetate Resin Emulsions are contained in this 4-page Laboratory Report prepared by our PAISLEY PRODUCTS Division. Everyone concerned with the improvement and production of Textile finishes should have this report. Ask for it on company stationery, please, when writing us about your problems.

MORNINGSTAR, NICOL, INC.

Scientific Starch, Dextrine and Natural Gum Service

630 West 51st Street, New York 19, N. Y. • Phone: COlumbus 5-2860
1770 Canalport Avenue, Chicago 16, Illinois • Phone: CAnal 6-2219
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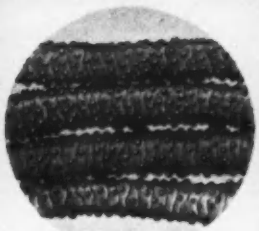
SYTON locks low-end weaves without making them "boardy"

Friction?
YES!

Tackiness?
NO!



Syton is an odorless, translucent, pH-stable silica sol for use alone or with other finishes. It deposits on fibers in millions of submicroscopic particles. They hold fibers in place, enable you to "antislip" yarns without binding them together.

Syton · Reg. U. S. Pat. Off

Delusters and improves quality of many fabrics

Perhaps you're after a low sheen (without frosting) or a dry, "worsted" hand on your fabrics. Syton can handle that, too. It works wonders with cotton, wool, synthetic fibers and blends.

Syton controls fabric distortion during finishing and in use. By varying the amount you can improve the hand of such materials as nylon marquisettes, rayon linings, satins, ribbons, rayon-wool blends, and glass fibers.

Monsanto Technical Bulletin No. I-110 tells all about Syton in textile finishing. Phone the local Monsanto representative now, or write: MONSANTO CHEMICAL COMPANY, Inorganic Chemicals Division, 710 North Twelfth Blvd., St. Louis 1, Missouri.

MONSANTO
CHEMICALS – PLASTICS

SURFACE TENSION CHEMICALS, PROCESSING SPECIALTIES FOR TEXTILES and SYNTHETIC FINISHES

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Tensols & Intramines

Dispersing Agents
Intrals, 224-229-384
Tensols, Janusol
Azocel B

Softeners
Intracol, Softener FG
Negamine 142A

Carbonizing
Tensols

Scouring Agents
Intramines

Leveling Agents
Tensols, Intramines
Intracols, Intrals
Azocel B

Lubricating
Intracol
Negamine 142A

Emulsifying
Intracols Mulsors

PRODUCTS FOR SYNTHETIC FINISHES

SOTEX N—for water dispersible paste
SOTEX NC—for lacquers and coating materials
SOTEX 3CW—for dispersion organic and inorganic pigments
SOTEX C—for soft textured pigments
SOTEX C, SOTEX NC, SOTEX 3CW—for alkyds, modified phenolics and melamines
SOTEX 3CW, SOTEX CW—for vapo set vehicles or glycol resins
SOTEX CW, SOTEX WO—for vinyl vehicles

Samples and Technical data upon request.

Since 1925 Manufacturers of Dyes and Chemicals

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Dyestuff Division Offer
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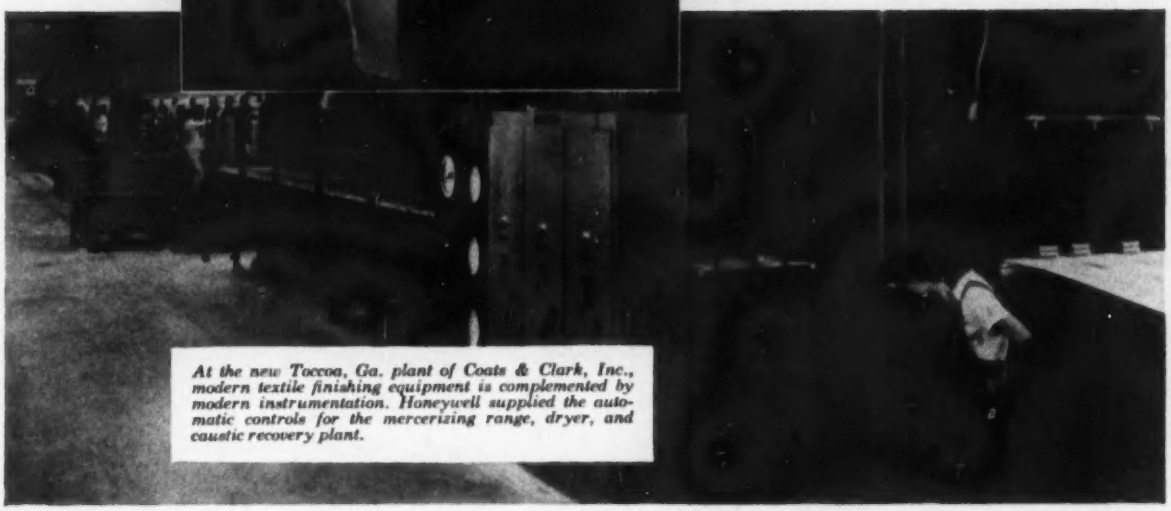
Synthetic Chemicals Inc.

335 McLean Boulevard Paterson 4, New Jersey

Honeywell process control assures high efficiency *for new Coats & Clark thread plant*



At the new Toccoa, Ga. plant of Coats & Clark, Inc., modern textile finishing equipment is complemented by modern instrumentation. Honeywell supplied the automatic controls for the mercerizing range, dryer, and caustic recovery plant.

COATS & CLARK'S modern new thread finishing plant in Toccoa, Ga., boasts the latest type processing equipment and automatic control. Instrumentation for caustic recovery, mercerizing, and drying is by Honeywell.

Outstanding example of economy and efficiency is the mill's caustic recovery plant. Caustic consumption has been reduced 75%. In addition, by-product heat in the form of hot water is used in the boiler plant, mercerizer, and other mill equipment. To protect this expensive equipment, three *ElectroniK* Conductivity Controllers continuously check the water for caustic content.

Mercerizing range temperature is controlled at four different stages by sensitive *ElectroniK* Recording Controllers. Honeywell instruments also control caustic density at the two middle stages.

As the threads leave the Andrews & Goodrich dryer, *Moist-O-Graph* detectors accurately sense moisture control, and regulate the set points of *ElectroniK* Temperature Controllers on each section of the dryer accordingly.

Honeywell can supply complete control equipment for every plant application. One source for instruments centralizes engineering responsibility, simplifies maintenance, and keeps your spare parts stock at a minimum. Your nearby Honeywell sales engineer will gladly discuss applications in your plant. Give him a call . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, Wayne and Windrim Avenues, Philadelphia 44, Pa.—in Canada, Toronto 17, Ontario.

● REFERENCE DATA: Composite Catalog No. 5002, contains brief description of the complete Honeywell product line.

MINNEAPOLIS **Honeywell**
BROWN INSTRUMENTS
First in Controls

ENGINEERED AND BUILT BY

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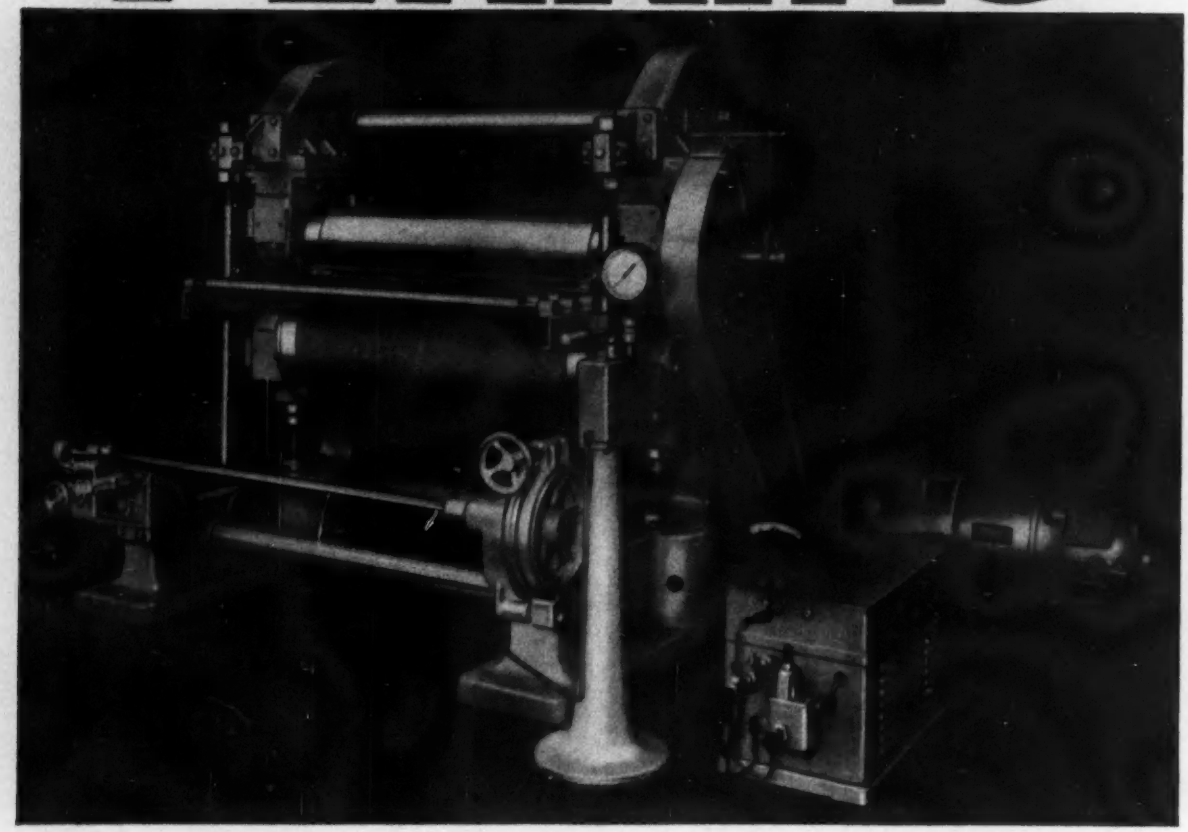
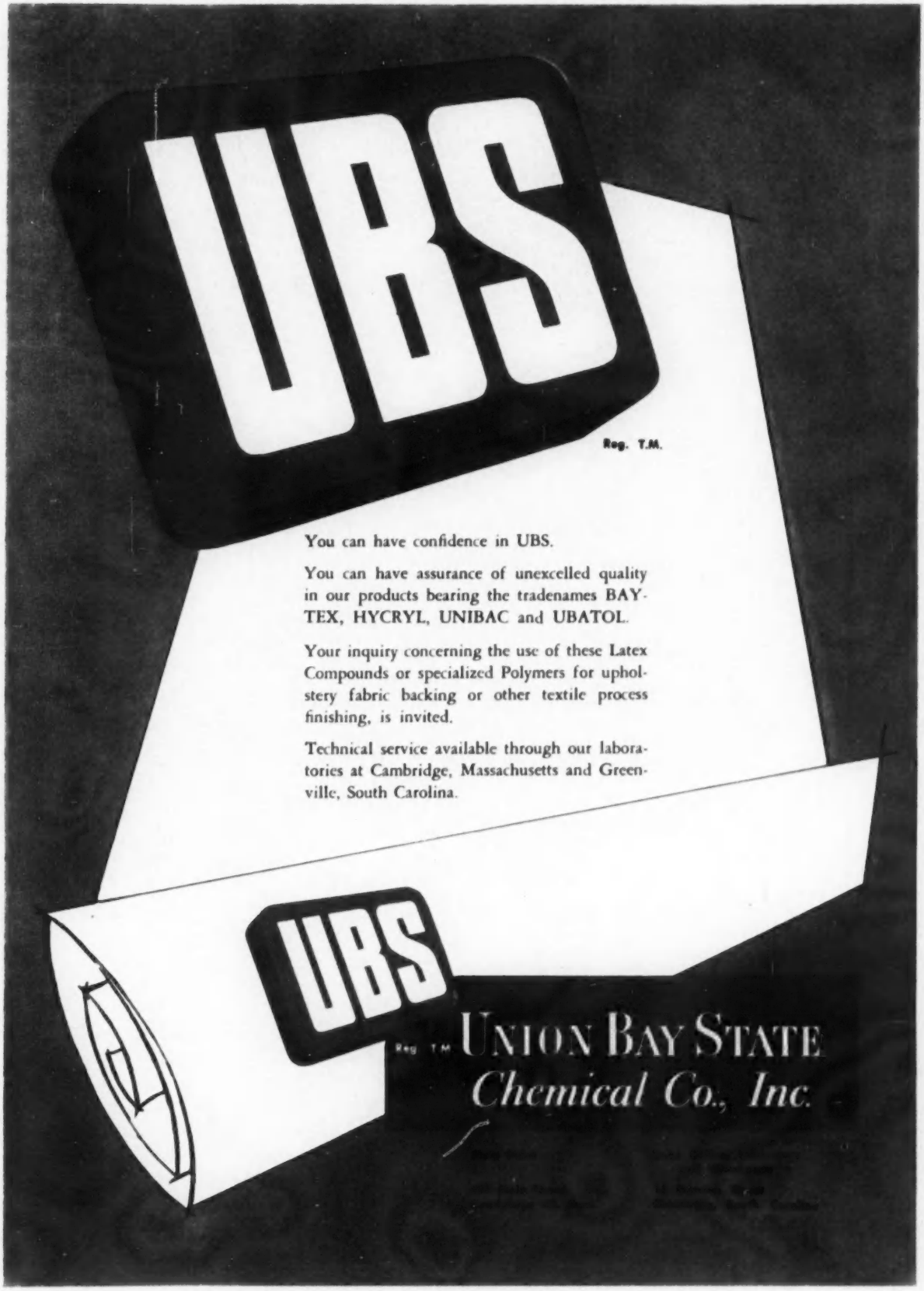


Another High Production Perkins Calender. This Two-roll Hydraulic Embossing Calender is equipped with plain bearings, top and bottom rolls (can be provided with roller bearings). Gas-heated steel roll — new type Perkins hydraulic power unit with built-in accumulator. Furnished for pressures up to 100 tons maximum pressure.

B. F. PERKINS & SON, INC., Holyoke · Massachusetts

Southern Sales Office · 1609 Liberty Life Bldg. · Charlotte · North Carolina

LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD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Your inquiry concerning the use of these Latex Compounds or specialized Polymers for upholstery fabric backing or other textile process finishing, is invited.
Technical service available through our laboratories at Cambridge, Massachusetts and Greenville, South Carolina.
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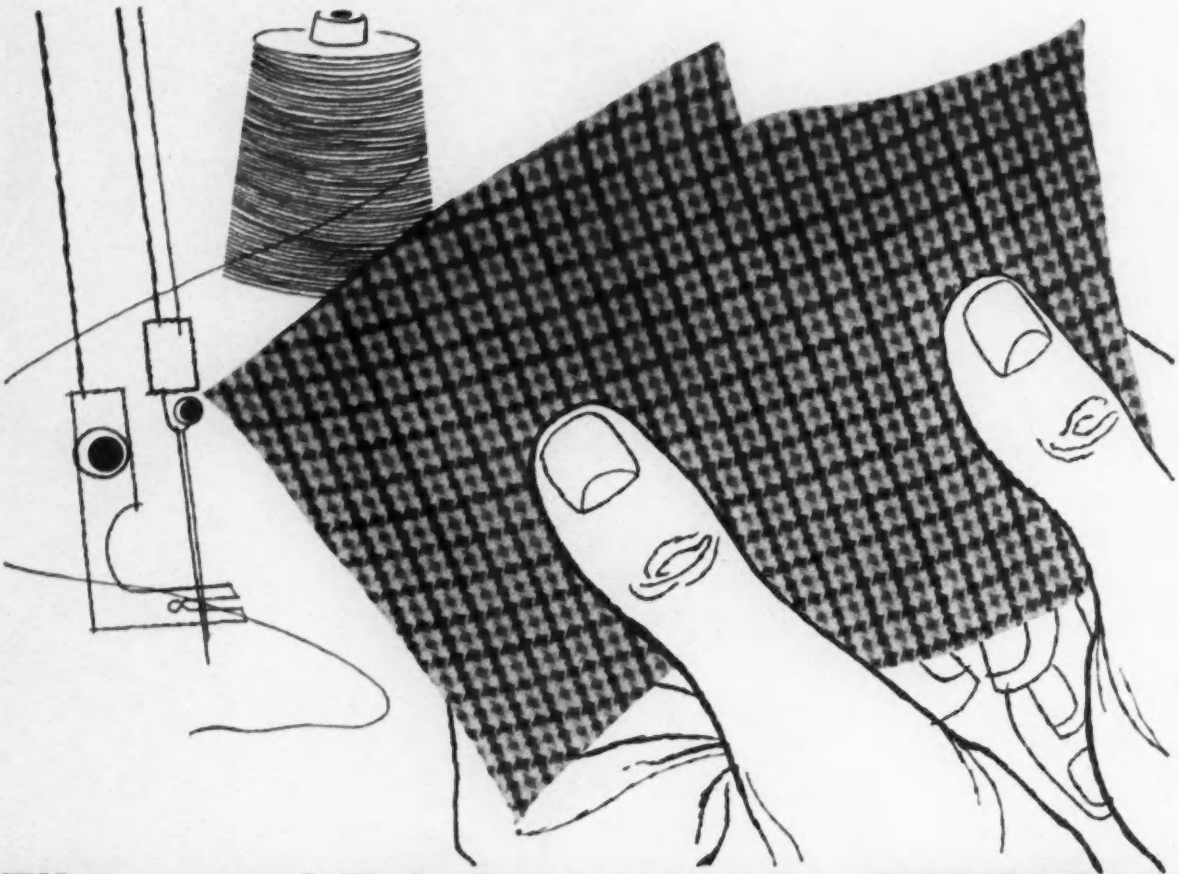


Fibers and Fabrics are more SALEABLE

Processing is SMOOTHER

when you use . . . Profine

One of the most important advantages of Profine is its ability to make all types of fibers and fabrics easier to handle.

As top dressing for resin finished fabrics, Profine imparts superior abrasion resistance, provides excellent lubricity, improves sewing properties, and improves hand.

In back-filling, Profine improves the feel of cloth, provides cutting and sewing lubricity, and reduces dusting.

Treated with Profine, *cotton knitting and weaving yarns,* industrial sewing threads, and wool blend knitting yarns are more supple . . . easier handled.

Profine improves the "sewability" of fabrics . . . Minimizes fusing, needle holes and cut threads . . . facilitates high-speed cutting and sewing.

As a napping assistant, Profine gives you a softer, loftier nap . . . often reduces the number of naps previously necessary.

On knit goods, Profine lessens the tendency for edges to curl during rolling, cutting and sewing. Effectively lubricates yarn for knitting.

As a sewing assistant on nylon tricot, Profine is tops.

Profine is helping many a textile processor turn out better finished, more saleable fibers and fabrics. There's a good chance that Profine can help smooth out processing operations in *your* mill.

PROCTER & GAMBLE Textile Finishes Sales Dept. • Gwynne Building, Cincinnati 2, Ohio

Makers of Olate, Proxel, Kyro and Orvus Products

The Magic is "LANOLIZED"

A wonderful new finish that makes nylon stockings superbly comfortable, exquisitely beautiful . . . nylons that *feel* better, *fit* better, *look* better, *wear* better! Examine LANOLIZED nylons critically. See how silky-smooth, soft, perfect-fitting they are . . . how cobwebby-sheer, smoky-dull . . . how completely alluring!

Lanolized®

THE NEW MEMBER OF THE DuraBlend FAMILY — THE PROCESS THAT TREATS NYLON STOCKINGS WITH LANOLIN

SCHOLLER BROS., INC.

Authorized Manufacturers and Distributors of LANOLIZED® . . . The Miracle Finish. Collins & Westmoreland Sts., Philadelphia 34, Pa. IN CANADA: Scholler Bros., Ltd., St. Catharines, Ontario

PIONEERS IN TEXTILE FINISHES SINCE 1907

ANNICQ'S RADIAX CHEESE CENTER

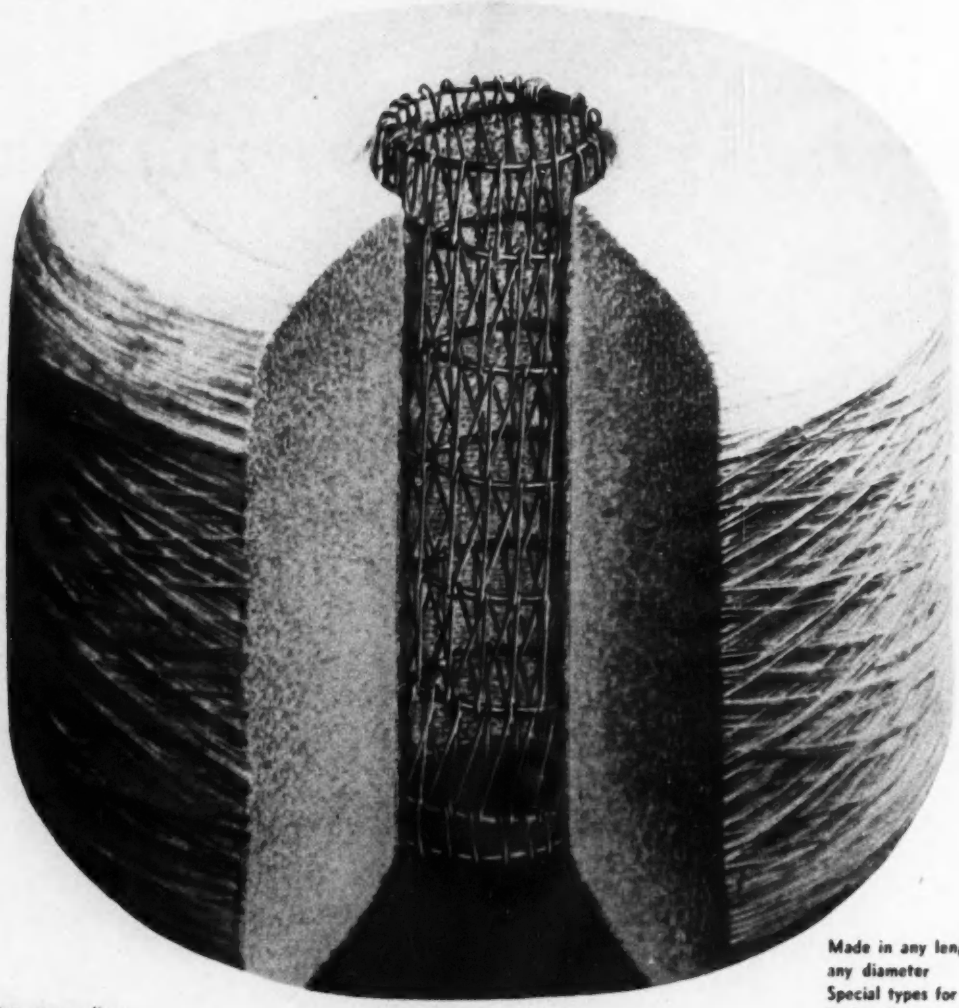
THE WORLD'S BEST FOR PERFECT DYEING

Established 1919

43 years pioneering

Ask for folders of our pressure dyeing machines

U. S. Patent No. 2158889 No. 2814764



Made in any length — any diameter
Special types for Barber-Colman winders

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Joseph Annicq is the original and first inventor and patentee
The cheese centers are only made in the best quality stainless steel

Excellent craftsmanship
Quick deliveries
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TWENTY YEARS OF CONTINUOUS SUCCESS
MILLIONS IN USE

JOSEPH ANNICQ — RENAIX — BELGIUM

U. S. Office: H. A. Kirk — Toledo — Ohio

Problems in Producing 'Wash N' Wear' Fabrics

by JAMES M. MYERS

Manager, Salisbury, N. C., Office

When we use the term, "Wash N' Wear", I am reminded of the question, "What is the Truth"? What is "Wash N' Wear"? Is the term just another advertising phrase to sell a lot of goods, or is this one the real McCoy?

There are many current problems facing us in the turning out of all cotton fabrics that are actually "Wash N' Wear". We will name a few of these:

Not all fabrics, due to their construction, yarn size, twist factor, type of cotton, etc., lend themselves to this type of finishing operation. The job finisher cannot please his customers across the board.

There is a serious sewing problem, because a crease resistance of over 3.4x3.4 causes seams to pucker, bulge, and look untidy in general in the finished garments. A fabric to be truly "Wash N' Wear" must be very resistant to crushing, and permanently so. It must also have these qualities while in the wet state.

There is a serious degradation problem, because very few chemicals on the market today will do this job correctly without greatly damaging the fabric strength-wise.

Plants must have the equipment, trained personnel and technical know-how to control this finishing operation. The finishing job is one of high skills in the application of complex resins, catalysts, plasticizers, softeners, etc.

The cost factor will play an important part in finishing "Wash N' Wear" all cotton fabrics. A good job will cost more to produce than current resin finishes. With competition from abroad increasing steadily, there is a question whether cheap fabrics, like 80 x 80 prints, will bear this added cost. We feel it will, although others in the industry say it will not.

The worst problem I saved for last. Many "Wash N'Wear" fabrics are on the market today that are no better than a fair resin job. What effect this will have on the long-range "Wash N' Wear" picture we do not know. Our guess is that it will not be good.

Standard Chemical Products has the equipment, the chemicals and the technical know-how to do a proper job. Samples and technical information will be gladly furnished by contacting our Sales Office in Hoboken, N. J., or Charlotte, N. C.

Standafin 77 for Whiteness

If you are looking for the whitest possible finish on synthetics, one that will remain white indefinitely during mill or shelf storage, then Standafin 77 is the product to use. Write or call today for complete information on this durable, non-irritation finish.

Meet Us at Convention

You probably have some ideas on "Wash N' Wear" problems that Jim Myers hasn't covered on this page. Let's discuss them the next time we meet; probably at the national AATCC convention in Atlantic City, September 21-24. Look us up, we'll be glad to see you.

Standardgrams

Stanset D 40's Crease Resisting Quality Lauded

We have received many enthusiastic and flattering reports from customers on the low chlorine retention and high crease resistant properties of our new chemical reactor resin, Stanset D 40.

A modified melamine type resin, Stanset D 40 requires slightly more catalyst than the acid type; 12-15% Stanset D 40 (on weight of resin mix) will give crease resistance around 3.2 x 3.1, and the chlorine degradation can be maintained below 25%. We recommend 0.5-1.25% of Catalyst 100 for Stanset D 40 and a curing temperature of from 310 F.-320 F. for seventy seconds.

Fabrics finished with Stanset D 40 will hydrolize only slightly when subjected to severe alkali washings. Fabrics treated with Stanset D 40 and cured to a good crease angle are highly resistant to yellowing when subjected to hot chlorine washes.

A combination of 5-8% Stanset D 40 and 10% Stanset L C N has been found to be very good for low chlorine retention on dress fabrics. When Stanset D 40, Stanset L C N and Stanset S-100 are applied to fabrics that have zero chlorine retention, are properly scoured free from alkali, are cured to a reasonably good crease angle, are properly washed and then tested by the procedure set forth by the AATCC, the chlorine degradation will be from 0-10%.

Physically, Stanset D 40 is an essentially colorless liquid with a weak aldehyde odor. Other typical characteristics are:

pH : 9.0 – 9.6
Specific Gravity : 1.158 – 1.160
Stability : 6 months, normal storage
Solubility in water : miscible in all proportions with hot or cold water.

If you have not already received our technical bulletin on Stanset D 40 drop us a line, or call. We will be happy to send one to you. It contains much more information than the few facts presented here.

STANDARD CHEMICAL PRODUCTS, Inc.
HOBOKEN, NEW JERSEY · CHARLOTTE, NORTH CAROLINA
CHATTANOOGA, TENN. PATERSON, N. J. SWANSEA, MASS. SALISBURY, N. C.
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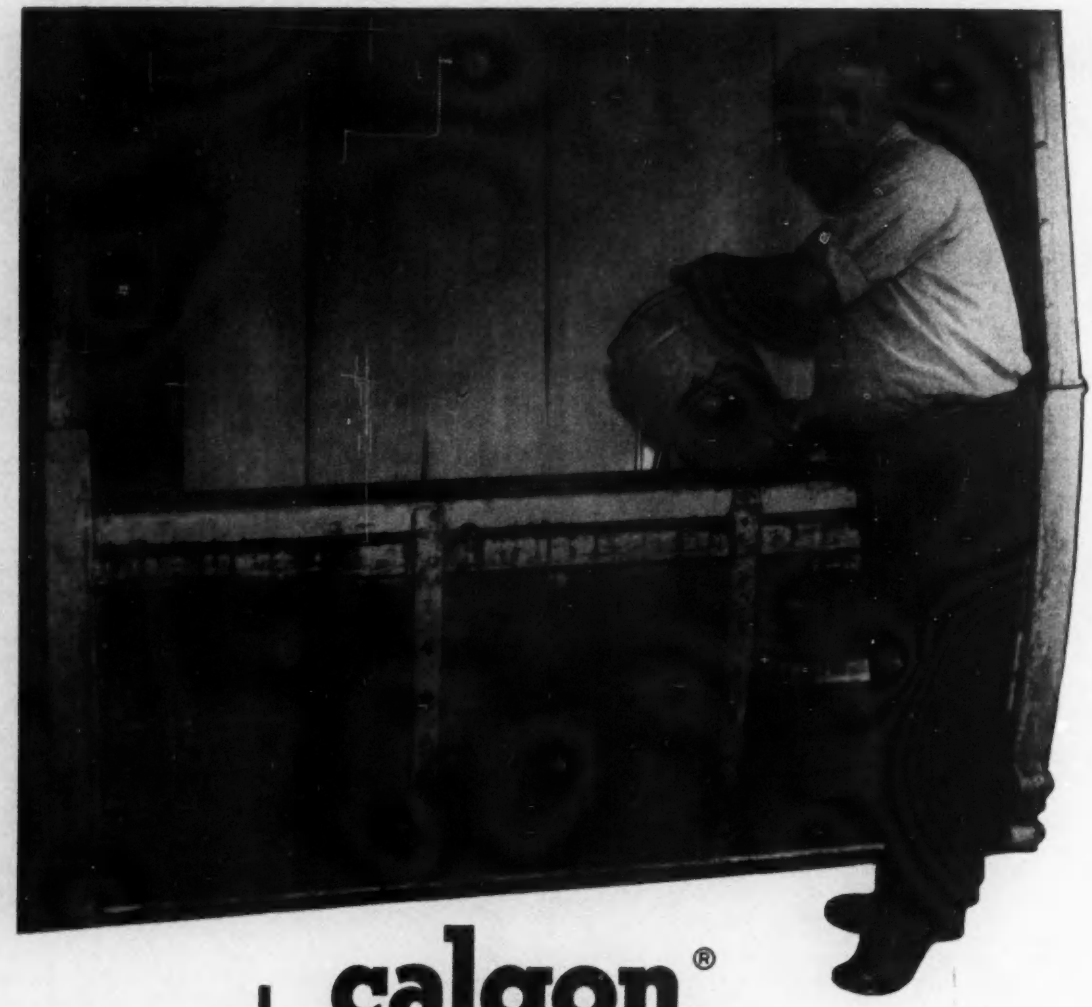

calgon®

conditions water

makes water rain-barrel soft . . .
dissolves and reactivates lime soap

Calgon is the most effective water softener for use in scouring or rinse baths. It prevents the formation of lime soap curds, in fact, Calgon is a *solvent* for lime soap. It ties up the lime so that it can do no damage, and releases the soap for full detergent action.

Calgon is economical, too. The recommended dosage is only 1¾ ounces per 100 gallons per grain of hardness . . . less than *any* other form of phosphate.

Calgon is a very effective dispersant, and has a solubilizing action on many dyestuffs. Calgon disperses pigments and aids the penetration of dyes in pigmented rayon.

Calgon Threshold Treatment keeps your water iron free by inhibiting corrosion in pipes and tanks and stabilizing iron or manganese dissolved in water. Calgon has demonstrated in plant after plant that its use is not an expense, but an economy. Calgon *saves* more money than it costs. Tell us about your particular problem, or send for the informative booklet, "Calgon Data for the Textile Chemist."

CALGON, INC. *A subsidiary of Hagan Corporation*
Hagan Building, Pittsburgh 30, Pa.

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IT IS impossible to-day for any one organization to excel in a complete range of dyestuffs and intermediates due to the complexity of problems in development, production and application of dyes.

The PEERLESS COLOR COMPANY, INC., has from its inception concentrated its entire effort on the manufacture of a limited number of products. It has consistently pursued this policy to make its products unusually well — rather than a *greater number* with only average results.

The excellence of the products resulting from PEERLESS' SPECIALIZATION is recognized by the trade and is the basis of its reputation.

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FOR EVERY TEXTILE OPERATION

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for Sizing	Carded and Combed Cotton Yarns	**use**	Nalex, Flojel, Hoosier Corn Starch
	Worsted Yarns		Nalex, Fibersize
	Spun Blends		Nu-Film, Nalex 40
for Finishing	Denims, Sheetings, Percales	**use**	Flojel, Nadex, Fibersize, RESYNS
	Fine Cottons		Fibersize, Clearfilm
	Rubber Hollands, Tracing Cloth, Glazed Chintz		Nalex, Hoosier Pearl, Amioca
	Rayon Fabrics		Clearfilm, Nalex 40
	Interlinings, Crinolines, Buckrams		Nadex, Fibersize, Hoosier Pearl
	Veilings, Elastic Netting, Knit Goods		Clearfilm, Fibersize, Nadex, RESYNS
for Printing	Vat Colors	**use**	Ambertex, Nadex, Vat 48, Kojel
	Rapidogen		Flotex, RW7, Ambertex, Kojel
	Napthols		Flotex, RW7
	Indigisols		Flotex
	Aniline Black		Flotex
	White and Color Discharge		Ambertex, Kojel
	Plisse Printing		Nadex 360
	Direct-Acetate-Acid Colors		Ambertex, Kojel
	Flock or Novelty Printing		RESYNS
for Misc.	Upholstery-Backsizing	**use**	RESYNS and Nalex
	Nonwoven Fabrics		RESYNS and Clearfilm
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270 Madison Ave., New York 16 • 3641 So. Washtenaw Ave., Chicago 32 • 735 Battery St., San Francisco 11 • and other principal cities.

NOW— ONE BATH SWEATER DYEING

Another Amalgamated First

Photo courtesy of
Nicetown Dye Works, Philadelphia.

There's a new, practical way to dye Orlon* sweaters faster and safer. It's the new Amalgamated One-Bath System. It cuts dyeing time considerably — affording a saving of time, labor, steam and water.

The Amalgamated One-Bath System for dyeing of Orlon sweaters may be used with both basic colors and acetate colors. Sweaters processed by this system are of even, bright shade and have soft, lofty hand, with good coverage.

Modernize your sweater dyeing — send for data sheets today.

AMALGAMATED CHEMICAL CORP.
Ontario & Rorer Streets, Philadelphia 34, Pa.

Export Agents:
Tiona Petroleum Company
1015 Chestnut Street
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1819 Spring Garden Street
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FIRST THREE WAYS:

DYEING NYLON HOSIERY . . .
The Siddons' Process — a revolutionary One-Bath scour and dye system. Combines Evenate OBX, a dye leveling agent, and Alkamine OBX, a detergent, to get hosiery clean. Insures true, even colors.

DYEING DACRON* . . .
The second Amalgamated One-Bath Process. Using Dynadye, good penetration, high tinctorial value and even, bright shades are assured. No chlorinated solvents or phenolic derivatives. Dynadye may be added at any time during dyeing cycle if additional carrier is needed.

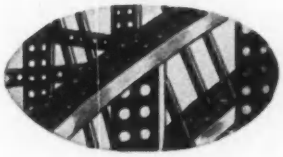
NOW . . . ORLON DYEING . . .
The third, great Amalgamated One-Bath System — to speed production and improve dyeing.

HOSIERY AND FABRIC FINISHES, DYEING ASSISTANTS AND SCOURING AGENTS

Amalgamated

*Reg. duPont T.M.

Preparation for a trouble-free finish...



WHAT HAS A BRIDGE TO DO WITH TEXTILES, you ask?

Well... for one thing they both need *preparation for a fine finish:* the bridge needs its vital rust-resisting prime coat of red lead prior to the finish coats; and textiles need the vital de-sizing operation prior to bleaching and dyeing.

Which brings us—naturally—to Diastafor de-sizing agent.

Diastafor *works.* It works in an unusually wide range of temperatures and pH, a range which will satisfy your every enzyme de-sizing requirement. And more—you will discover it works with ease, speed and economy.

No matter under what conditions you may be working—with various lots... with variations in water and sizing formulas... with cottons, rayons or mixed goods—Diastafor, available in types L, L_2 and D, will prove itself to you, in your own mill. Try it for either the continuous or batch process. Remember: it has been a leader in its field for 44 years!

Our sales and technical staffs are ready to save you time and trouble. For your own trouble-free finish, consult us. Standard Brands Incorporated, Diastafor Department, 595 Madison Avenue, New York 22, New York.

DIASTAFOR

A TRADE MARK OF STANDARD BRANDS INCORPORATED

From wool to the new synthetics—

When you use soap

Colgate Formula 10 does the best job!

Gives a better final result. 92% Sodium Oleate . . . titer on the fatty acids 10° Centigrade . . . easily dissolved . . . excellent detergent effect . . . mild fulling action when you want it. Easily rinsed at low temperatures with no bad odor left in the fabric.

Yes, you can depend on COLGATE FORMULA 10* for dozens of textile processing and finishing jobs.

For low-temperature washing *ordinarily requiring olive oil soaps*, try COLGATE FORMULA 25*.

*Sold in eastern states only.

See your local C. P. representative for details, or write today to our Industrial Department.

FREE! New 1955 Handy Soap and Synthetic Detergent Buying Guide tells you the right soap for every purpose. Get a copy from your C. P. representative, or write us at any one of the offices listed below.

Colgate-Palmolive Company

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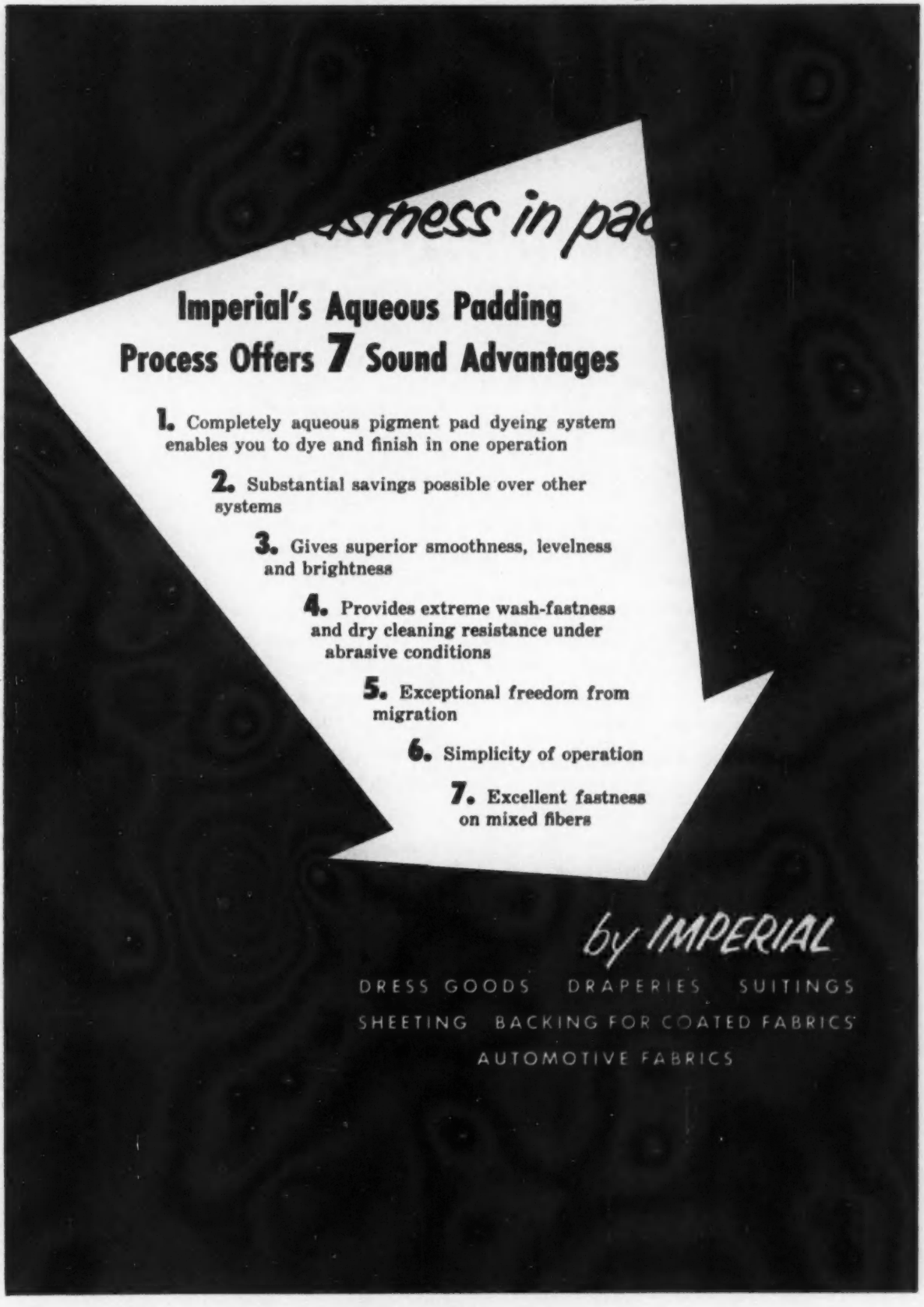
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Imperial's Aqueous Padding Process Offers 7 Sound Advantages
1. Completely aqueous pigment pad dyeing system enables you to dye and finish in one operation
2. Substantial savings possible over other systems
3. Gives superior smoothness, levelness and brightness
4. Provides extreme wash-fastness and dry cleaning resistance under abrasive conditions
5. Exceptional freedom from migration
6. Simplicity of operation
7. Excellent fastness on mixed fibers
by IMPERIAL
DRESS GOODS DRAPERIES SUITINGS
SHEETING BACKING FOR COATED FABRICS
AUTOMOTIVE FABRICS

*A **cure**, not a treatment, for Pollution Problems...*

This is the first in a series of advertisements based on a technical paper by B. W. Dickerson, Sanitary Engineer, Hercules Powder Company. A complete copy of the report or additional technical data on CMC Warp Size can be obtained by writing directly to Hercules.

If finishing mill wastes cannot be dumped into nearby waters in their present form and the cost of treatment is prohibitive, what is the answer? Many waste engineers have found that going to the source of the trouble can correct the situation and eliminate the need for a large capital expenditure for sewage plant facilities.

In a typical finishing plant, a percentage breakdown of the BOD (Biochemical Oxygen Demand) shows that the desizing operation is the obvious "villain". Up to 60 per cent of BOD pollution is a result of desizing, with dyeing and finishing contributing 30 to 40 per cent and bleaching about 10 per cent.

Years of preliminary study, followed by actual use on a production scale, have demonstrated that the introduction of proper amounts of CMC Warp Size in the sizing formulation can cut desizing pollution by as much as 75 to 85 per cent. Such a reduction of pollution would permit many mills to conform to abatement regulations without the need for construction and operation of a waste treatment plant. For mills with more severe pollution problems, the use of CMC Warp Size can reduce the cost and operating expense of treatment units as much as 50 per cent.

Formulations composed of two parts starch and one part CMC Warp Size provide adequate sizing at 6 to 8 per cent add-ons. In many instances, this much lower add-on will reduce the amount of water required in desizing by as much as 50 per cent. The presence of water soluble CMC Warp Size in the formulation can eliminate the need for the use of enzymes, greatly speeding and simplifying the desizing process.

VC55-5

Virginia Cellulose Department

HERCULES POWDER COMPANY

INCORPORATED

993 Market St., Wilmington 99, Delaware

EASTONE FAST PINK 3B-GLF

THE FIRST ACETATE PINK OFFERING OUTSTANDING FASTNESS TO GAS, LIGHT, SUBLIMATION AND WASHING

You've come to *expect* outstanding fastness in acetate piece-dyed with Eastman GLF colors.

Now, here's the latest addition to this popular range of dyes. It's a new GLF dye that produces a bluish-pink color. Besides its resistance to fading caused by gas, light, sublimation and washing, Eastone Fast Pink 3B-GLF also offers exceptional fastness to perspiration, crocking and crease-resistant resins.

Its excellent exhaustion and level-dyeing properties in a temperature range of 160°—190°F., enable you to get good results whether you dye in box or jig.

Eastone Fast Pink 3B-GLF is dischargeable and may be used for printing. It is not affected by diazotizing and developing.

We will be glad to send you detailed information and sample quantities of Eastone Fast Pink 3B-GLF for evaluation. Write to Eastman Chemical Products, Inc., Chemicals Division, Kingsport, Tennessee.

Eastman Acetate Dyes are sold in the United States by Eastman Chemical Products, Inc., a subsidiary of Eastman Kodak Company, in Kingsport, Tenn., and Lodi, N. J. On the West Coast through Wilson Meyer Co.: San Francisco, Los Angeles, Portland, Seattle and Salt Lake City. In Canada, through Clough Dyestuff Company, Ltd., St. Laurent, Quebec.

—the finest acetate fibers and dyes are made by **Eastman**

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From time immemorial, solving problems has meant the difference between success and failure. No other equipment can compare with Gaston County's combination Beam and Package Dyeing Machines for solving so many of today's problems — so efficiently and so economically.

Unmatched for flexibility, ruggedness, and dependable automatic controls — these machines enable you to dye natural and synthetic yarns — they accommodate every conceivable type packaging, raw stock or wool tops, beams, cones, tubes, springs, packages and cheeses. From the loading to the unloading of the kiers, every phase of the dyeing operation is under positive automatic control.

Let our engineering department work with you to put more profit into your dyeing operation.

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Pioneers in Automatically Controlled Dyeing Machines

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Hoboken, N. J., G. Lindner, Mgr.

The Rudel Machinery Co., Ltd.
614 St. James St., W., Montreal
137 Wellington St. W., Toronto

RANEDARE
Water Repellents

RANEDARE R — for synthetics
Designed specifically for synthetic fabrics for use with crease resistant and stabilizing resins to provide durable water repellency, shrinkage control, wrinkle and spot resistant effects. Easily diluted in cold water. Low foam, has good running properties. Results are durable to dry cleaning and washing. Has an extremely high shelf life and is very compatible with other resins.

RANEDARE C — for cottons
Especially for use on cotton, to produce high and durable water repellency. Durable to repeated washings or dry cleanings. Very economical, easily diluted. Has high shelf life. Runs exceptionally well with low foam.

RANEDARE S—a silicone for synthetics
Formulated from General Electric Wonder Silicone Dri-Film®, this Ranedare has top durability to dry cleaning, even on velvets and sheer fabrics where other durable water repellents fail. High fastness to consecutive washings. Also works well on cottons and wools.

other Metro-Atlantic products

Auxiliary Products	Dyestuffs
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Also Softeners	Metrosols
Also Dyeing	Metrogens
& Printing Assistants	Metrofines
Also Wetting Agents	Metrozans
Also Anti-Static	Substantols
Also Gas Fading	Metrosols
Inhibitors	Metrosols
Also Slip Proofing	Metrodiazines
Agents, etc.	Metrazines
	Metro Naphthols & Salts

[redacted]

Emboset RESINS

Emboset LOCLOR — LOW CHLORINE RETENTION. Produces crush resistant and stabilized effects on cottons and rayon. Emboset Loclor is one of the lowest chlorine retentive resins on the market today. Wherever fabrics are subjected to washing and bleaching . . . this is your resin! Low chlorine retention keeps yellowing and tensile strength losses at a minimum. The resulting finish is wash resistant, crease resistant and fully stabilized. A durable resin producing highly efficient mechanical effects.

Emboset B — SOFT HAND FOR SYNTHETICS, COTTONS and MIXTURES. A liquid stabilizing and crush proofing resin with a high shelf life. Easiest resin you ever used . . . extremely economical. Produces soft hand with superior fastness properties, crease resistance and shrinkage control. Very compatible with other resins. Applicable to synthetics and mixtures. Durable . . . produces highly efficient mechanical effects.

Emboset NR — FIRM AND FULL HAND. A crease proofing, stabilizing liquid resin that produces firmness, resiliency and shrinkage control on hydrophobic fibers such as acetate, orlon, dacron, nylon, etc. Especially good for heavy nylon shoe cloth, or for nylon blouse finishes where a firm, resilient hand is required. Economical and easy to run. Comparatively easy to cure . . . has high shelf life. Durable . . . produces highly efficient mechanical effects.

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Dacron Dyeing Assistant
DACRO-DYE — a newly developed "carrier" for dyeing Dacron polyester fiber with dispersed type dyestuffs. Free flowing, self-emulsifying. Easy to apply. Extremely economical.

Complete Technical Information on Request.
Mill Runs Arranged At Your Request and Convenience.

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IMPORTED DYESTUFF SPECIALTIES:
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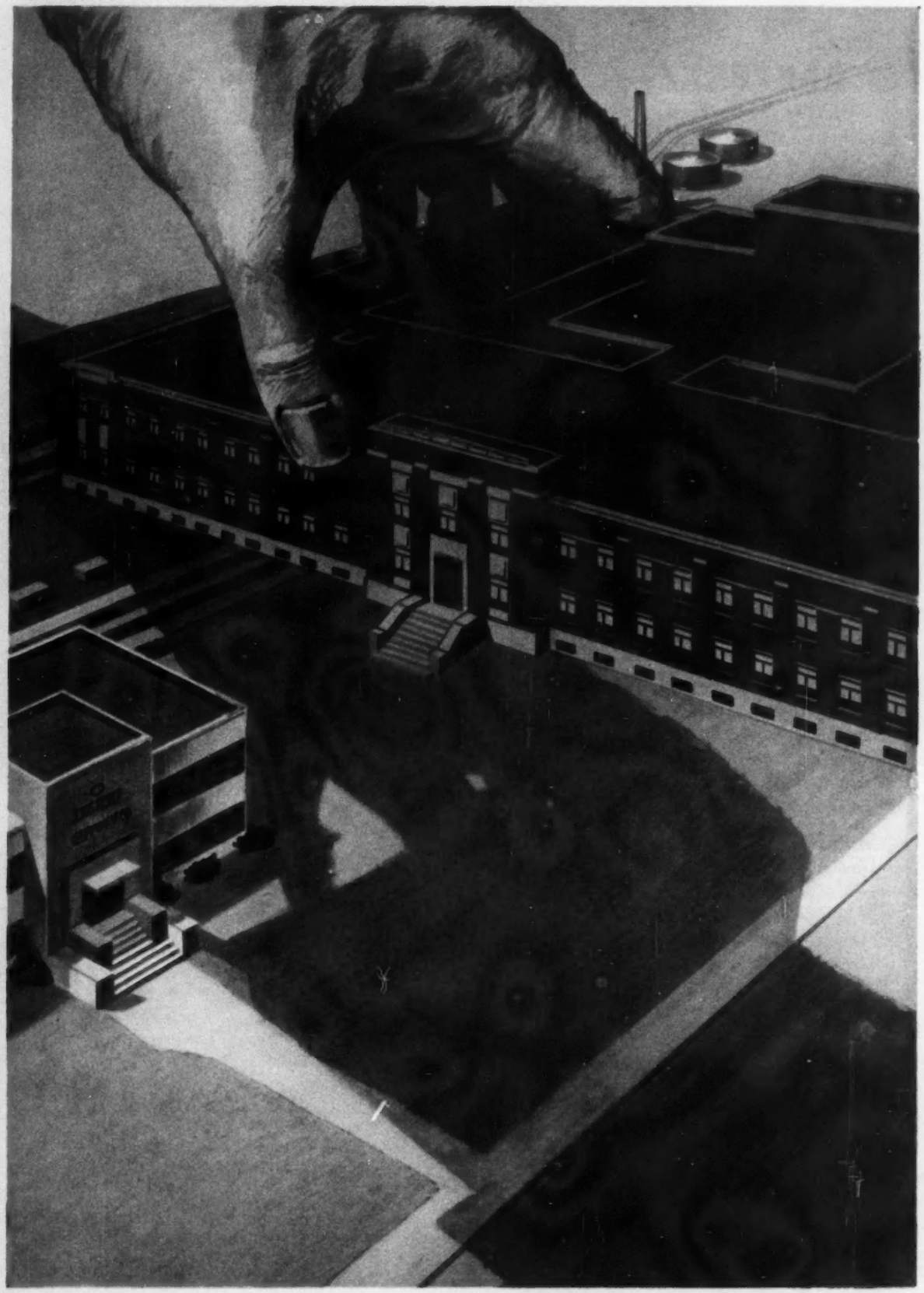

how to expand your laboratory without spending a cent

In Philadelphia there's a research laboratory you can't buy and a skilled staff you can't hire. Yet, in a very real sense, you get the full benefit of these facilities just as if you added them to your own laboratory. And the cost to you is nothing.

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DU PONT DUPONOL* RA...

SURFACE ACTIVE AGENT

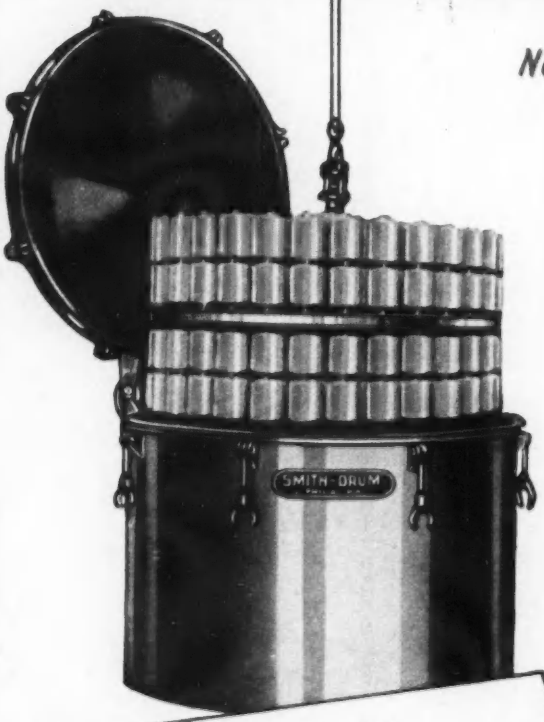
*REG. U. S. PAT. OFF.

DU PONT

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

SMITH-DRUM slashes package extracting-drying time to . . .

LESS THAN *ONE* HOUR



New **SMITH-DRUM Rapid Package Dryer Makes Tremendous Savings in TIME . . HORSEPOWER-HOURS . . STEAM . . LABOR.**

Here is a new package drying machine that reduces the time required for *extracting and drying* dyed packages to *less than an hour!* Compare that to the time it takes you to extract and dry with your present equipment . . . then figure the savings you could make with this new SMITH-DRUM machine.

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432 W. Allegheny Avenue
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New Speed Records Are A Habit With SMITH-DRUM

Since 1939, SMITH-DRUM engineers have been establishing new speed records for drying package yarn. First, from 24 hours to 3 hours . . . and now to *less than 1 hour*. No other manufacturer has contributed so much to lower yarn drying costs!

Now

PAD ACETATE FABRICS

in the Greige

without detergents, shading or tail-off

PAD COLORS for Acetates and Nylons

These important new PAD COLORS make it possible to pad acetate fabrics in the greige *without* use of detergents or penetrating agents. PAD COLORS eliminate shading and tail-off. Of the water-soluble type, they are ideal for use on acetates and nylons in either pad hot water or pad steam systems. Currently used in production quantities. *Patent Pending.* Colors: **BLUE BS, BLUE GS, YELLOW GS, ORANGE 3RS, SCARLET BS, RED RS, RUBINE BBS, PINK FS, VIOLET RNS.**

Visit
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at the
AATCC Convention
for a practical demonstration
of these new colors

WRITE FOR COMPLETE DETAILS

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to provide the equipment, methods and know-how
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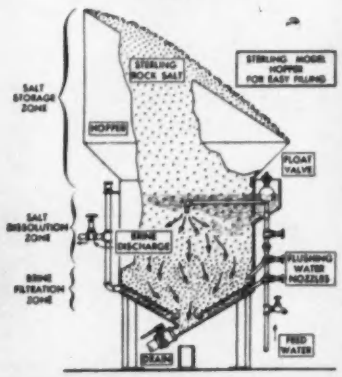

THE STERLING
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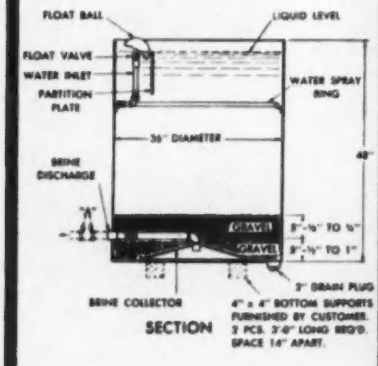

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Ether Gum Binder

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Durasets (Modified Urea Formaldehyde Resins)

Catalyst CST (Organic)

CST #5 (Weighter Finish)

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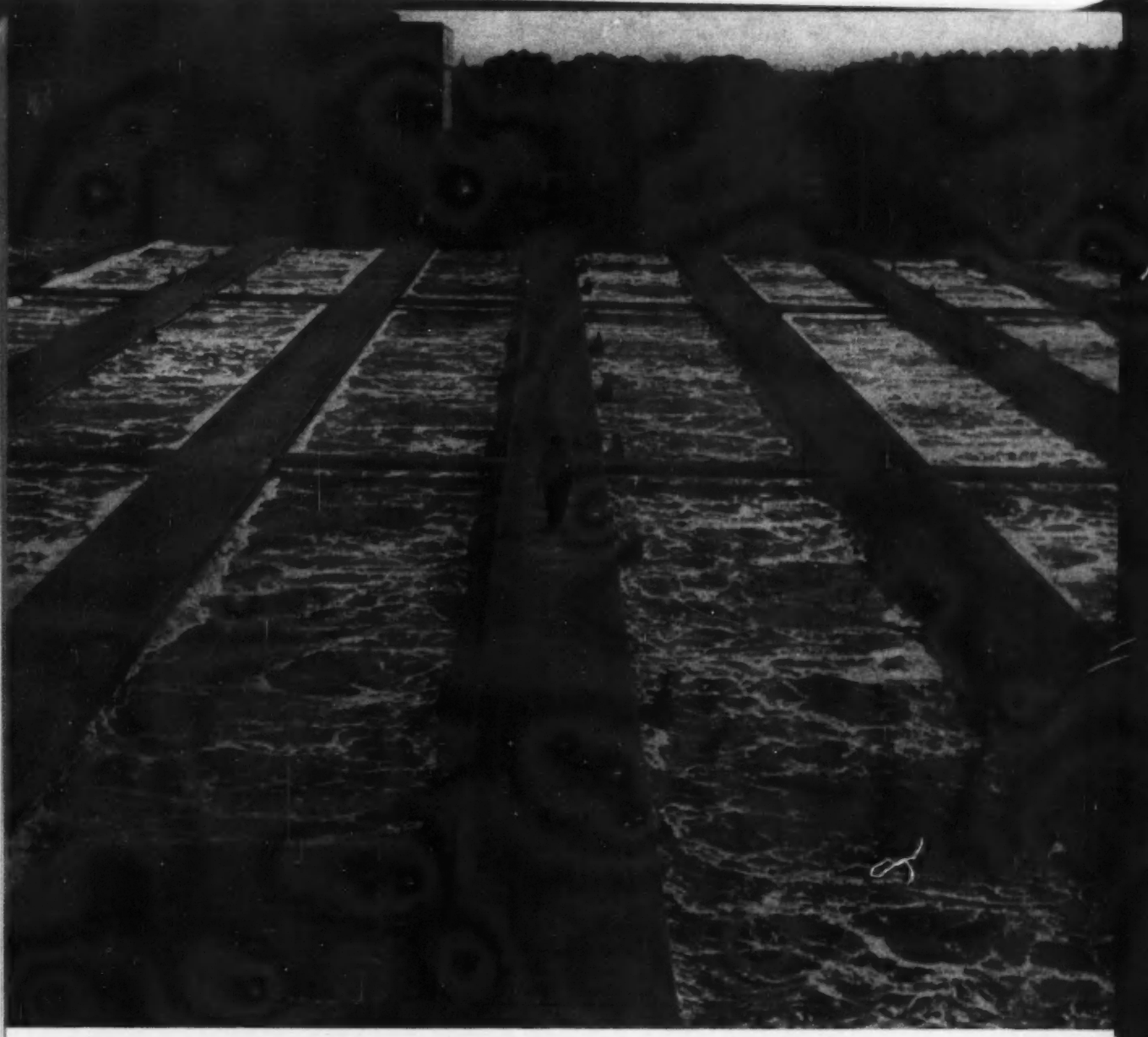

Mathieson Activated Alum: *settles water treatment problems*

Quick-dissolving and fast-settling, Mathieson sulphate of alumina is a superior filter alum specifically designed for industrial water and wastes treatment. Its porous structure enables it to go into solution fast. The finely ground natural silicates aid coagulation, form heavier floc, and allow a greater volume to be processed in each treatment period.

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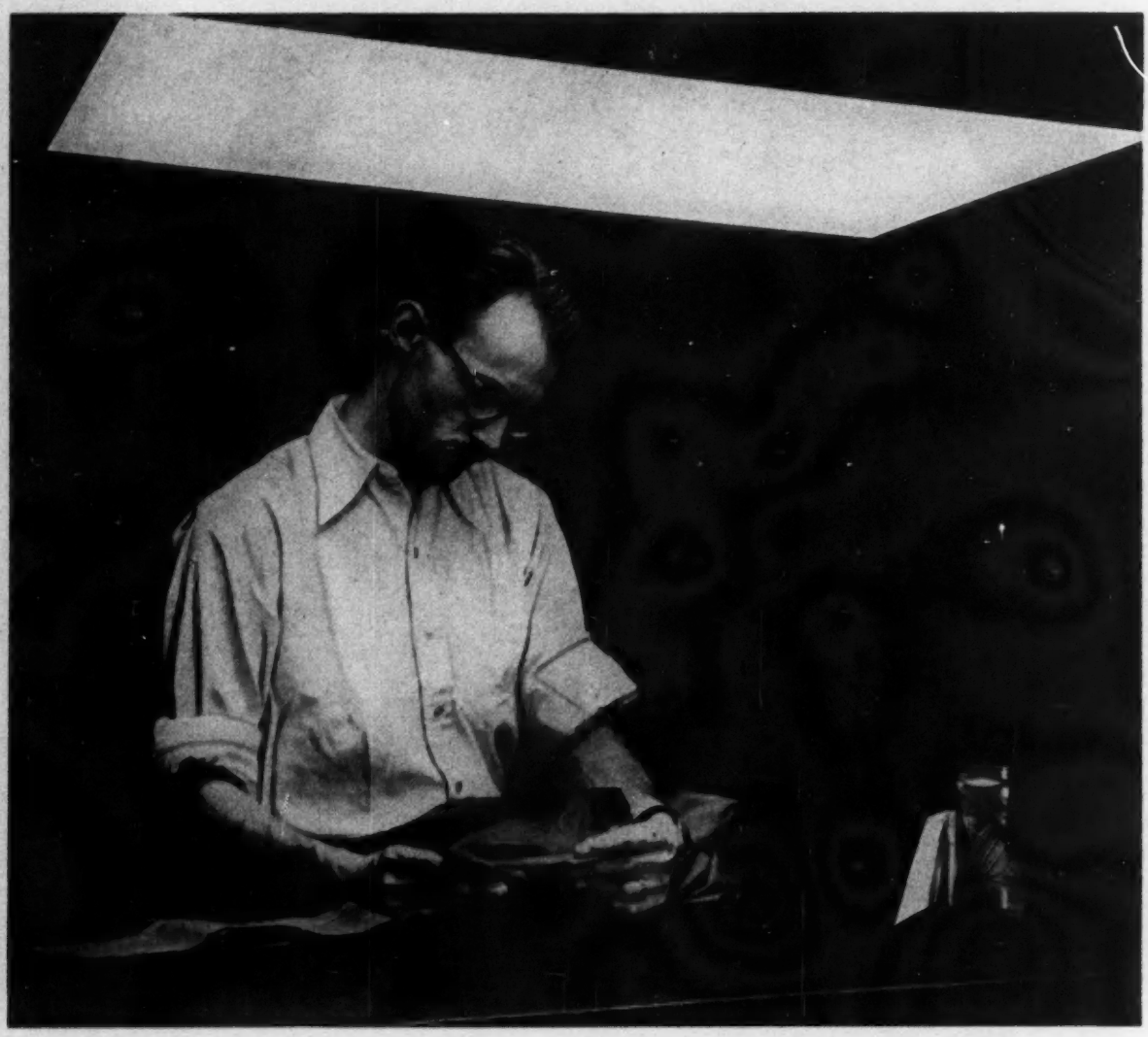

DEPEND ON "VIRGINIA" SODIUM HYDRO

for easy and accurate duplication of difficult shades in your dyeing operations

Matching shades comes easier when the reducing power of the hydro is uniform from vat to vat. Whether the material be raw stock, yarn or piece goods, dyers attest to this reliable property of concentrated "Virginia" Sodium Hydro.

This is the product that is

- Uniformly crystalline
- Free-flowing
- Quickly water-soluble
- Stable in storage and solution

Prove to yourself that there is a difference. Ask for a test sample, or, if you prefer, one of our technical men will visit you.

Perhaps you'll be interested, too, in the "Virginia" engineered equipment which automatically feeds hydro to the dye bath in accurately measured amounts.

Write us today for information on how this "Virginia" development can save you money.

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PROVEN silicone finish for all fabrics

Proved by DRUSIL's Million-Yard Test

Drew's half-century of experience and developed techniques created DRUSIL, the now proven silicone water-repellent finish for all fibres and fabrics; having exceptional durability.

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- DRUSIL's exclusive molecular structure gives it its stable properties, ease of application and maximum durability.
- DRUSIL improves abrasion resistance, tear strength and sewability. Does not affect fabrics' shade or light-fastness of colors.

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Textile Chemical Division

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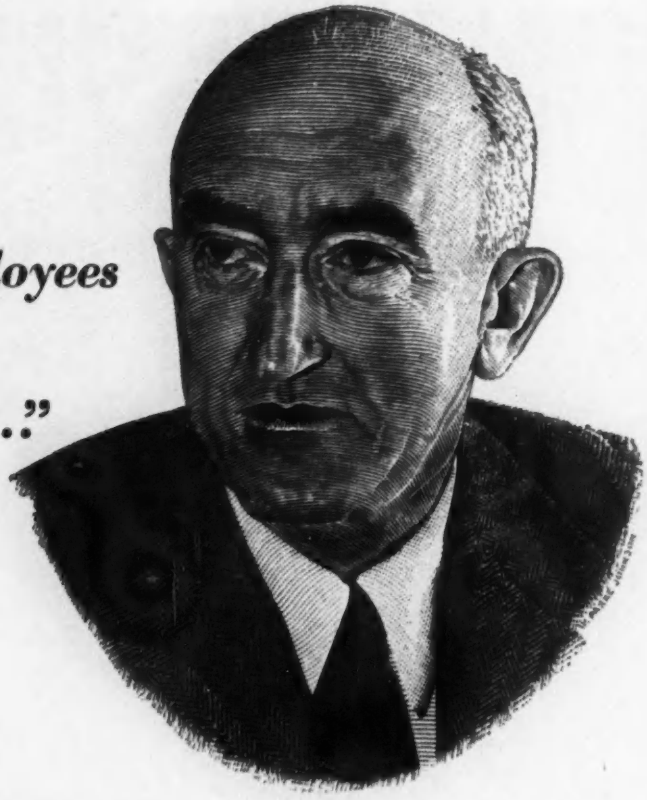

WILLIAM M. ALLEN
President
Boeing Airplane Company

"Boeing's 59,000 employees feel closer to the company since our recent successful person-to-person payroll savings drive in the Seattle and Wichita Divisions. Through letters and personal observations many employees have told us they have a greater sense of being a part of the company—that Boeing is interested in the welfare of each and every man and woman on the payroll."

That's the way it is with Payroll Savers. With the realization that systematic investment in U. S. Savings Bonds is a sure road to the down payment on a home, comfortable retirement, or other objectives, comes a better appreciation of a man's job and his company.

To most Payroll Savers, a day's absence from work means just that much out of his take-home savings. And he no longer takes chances, because he wants to stay off the accident list. He looks for better and quicker ways to do his job—promotion will mean more dollars for Savings Bonds. As a stockholder in America he takes a better interest in national affairs, the sound dollar, and economic stability.

91% of Boeing's 65,000 employees—more than 59,000 men and women—are Payroll Savers, as a result of a person-to-person canvass that put a Payroll Savings Blank in the hands of every Boeing employee. Certainly that is a high percentage of which Mr. Allen may well be proud. But it is not exactly unique. A number of the 45,000 companies which have the Payroll Savings Plan have 90% participation; many are in the 80% to 90% group, and many more are in the 60%, 70%, 80% class. In every case, these high percentages followed a person-to-person canvass that put a Payroll Savings Application Blank in the hands of every employee.

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The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

American Dyestuff Reporter

"...without cost or obligation"

Another textile processing problem solved. He's heading back to Syracuse . . . home and family . . . and maybe a stretch of regular hours in the lab.

Maybe, that is.

A SOLVAY Technical Service man's job can take him any place where there's a customer in need of assistance in handling or using SOLVAY products.

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Seems like quite a job ". . . without cost or obligation". But, SOLVAY has always felt that its responsibility as a manufacturer extends into the plants of its customers—to assure them of peak efficiency from the chemicals that set the standard for the industry.

SOLVAY can supply these not-ordinarily-available services because its Technical Service has separate sections for different industries.

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American Dyestuff Reporter was founded in 1917 and the Textile Colorist and Converter, formerly Textile Colorist was incorporated with it on January 1949. Published every other Monday by the HOWES PUBLISHING COMPANY, INC. 44 E. 23rd Street, New York 10, N. Y. C. R. Howes, President; Ernest J. Finan, Exec. Vice President; Norman A. Johnson, Vice President & Treasurer; Myron D. Reeser, Vice President; C. Essenbreis, Secretary. Telephone GRamercy 5-9361.

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Devoted to Textile Chemistry
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AATCC CONVENTION ISSUE

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This blue which is extremely fast to light and washing on cottons, rayons, and linens makes fashion news wherever it appears. Naphthol AS creates this indispensable color for smart wardrobes in any season, and is a "natural" for summer washables. Get samples and formula from Pfister.

Pfister Chemical Works INC.

Ridgefield, New Jersey

Proceedings of the

American Association of Textile Chemists and Colorists

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Editor of Proceedings: Carl Z Draves, 30 Lahey St, New Hyde Park, N Y

AUGUST 29, 1955

1955 NATIONAL CONVENTION

Auspices of the Philadelphia Section • Chalfonte-Haddon Hall, Atlantic City, N J

SEPTEMBER 21-22-23-24

Greetings FROM YOUR PRESIDENT

RAYMOND W JACOBY
(Ciba Co, Inc)
President

DEAR Fellow Members:

An Annual Convention is always an occasion for some self appraisal. Our Association was founded thirty-four years ago by men of vision and courage with aims which were, in their day, revoultionary. Each year we have seen these aims achieved more and more on an ever-widening basis. In spite of all of their vision, it is doubtful if the founders ever dreamed that our Association would develop to the stature which it has attained.

The AATCC standard test methods and equipment have been adopted wherever fastness properties are considered. The work of our numerous committees and individuals adds continually to technical knowledge and advancement. Our participation in the recent study of civil defense needs in connection with nuclear explosions indicates how the Association's activities keep pace with the latest developments. Our official publication — *The American Dyestuff Reporter* — has world wide circulation among those who desire to keep informed regarding important progress in the industry.

Each year at the Annual Convention the preceding year's accomplishments are reviewed. It is a vital means of attaining one of the aims of our Association — "To establish for the members channels by which the interchange of professional knowledge among them may be increased."

The planning for an Annual Convention is a major undertaking. With each one seemingly better than the last, one feels a sense of pride when he realizes that, throughout the length and breadth of our Association, there are so many capable members who labor long and hard so that each Convention will be a credit to the Association.

The 1955 Annual Convention, to be held at Atlantic City September 22-24 under the sponsorship of the Philadelphia Section, will uphold the reputation established in the past. The program will be instructive and invigorating. It will recognize the atomic age in which we are living by including a report on our studies during Operation Cue.

I am confident that you, as a member of the Association, believe in our aims. I know of no better way to assist in realizing them than by attending the Convention. There you will feel the greatest pride in the accomplishments of your Association.

I hope I may greet you personally at Atlantic City.

RAYMOND W JACOBY
President

Greetings

FROM THE VICE PRESIDENTS*

GEORGE L BAXTER
(Bradford Dyeing Assoc)
Vice President
Central Atlantic Region

JOSEPH H JONES
(Phoenix Dye Works)
Vice President
Western Region

GEORGE O LINBERG
(Synthron, Inc)
Vice President
New England Region

WALTER M SCOTT
(U S Dept of Agriculture)
Vice President
Southern Region

NEW ENGLAND REGION

GREETINGS!

With the 1955 AATCC Convention almost upon us, it is my hope that the New England Region will be very well represented.

You no doubt know that next year the Perkin Centennial will be held in New York, and in 1957 the Annual Convention will come to the New England Region and be held in Boston.

The objectives of the Annual Convention are threefold: technical, business, and social. It is the one gathering during the year when you can associate with members from all the other Sections to your advantage.

I hope to see you at Atlantic City.

GEORGE O LINBERG
Vice President (New England Region)

SOUTHERN REGION

GREETINGS from the Southern Region!

This issue of the *American Dyestuff Reporter* is featuring the Annual AATCC Convention. You will note that a very instructive and entertaining program is being arranged by the Philadelphia Section, which is sponsoring this Convention. Many members from the New England, Mid-Atlantic and Western Regions made the trip to Atlanta last year to attend the Convention sponsored by the four Southern Sections. I hope that a goodly number of members from our Southern Region will reciprocate by going to Atlantic City and enjoying the hospitality that I know will be provided for them.

Let our slogan be, "See you at the Convention."

WALTER M SCOTT
Vice President (Southern Region)

WESTERN REGION

GREETINGS from the Western Region!

Our Region, which embraces by far the largest geographical area of any in the AATCC organization, looks to increased representation at this year's Annual Convention.

Although our Region is the most remote from the 1955 Convention site at Atlantic City, many of our individual and corporate members realize what is to be gained by attendance there. The technical sessions and exhibits will offer first-hand results of recent research investigations, practical processing developments, and new theories on the natural and man-made fibers. In addition, the opportunity to meet with people in the same field, but from other sections of the country, presents itself.

We of the Western Region look forward to seeing you at Atlantic City!

JOSEPH H JONES
Vice President (Western Region)

* Because of illness, Mr Baxter was unable to prepare a message.

Greetings

FROM THE CONVENTION CHAIRMAN

FREDERICK V TRAUT
(Globe Dye Works Co)
Convention Chairman

THE Philadelphia Section is honored to serve as host for the 1955 National Convention, and its members look forward with pleasure to welcoming you on September 22nd.

The headquarters of the convention will be the Chalfonte-Haddon Hall Hotel, which has ample accommodations for the convention functions.

Our exhibition will be held on the lounge floor of Haddon Hall. There will be more than 50 exhibitors covering every phase of our industry. In addition, each Intersectional Contest Paper has been allotted a booth in order to show us the results of their very important work. A lounge space will be available so that you may meet and greet your friends.

The technical program, we believe, will be of the highest quality and interest. It will be climaxed by the Intersectional Contest on Saturday afternoon. It is said that two heads are better than one. If two men, each with a quarter, meet and exchange quarters, neither one is better off. However, if two men, each with an idea, meet and exchange ideas, each is richer as they both have two ideas.

The Olney Medal will be awarded as usual at a special luncheon, and we would like to have a large attendance at this event.

The popular Alumni Luncheon will offer a chance to meet your fellow alumni and talk over old times.

Food is always a popular subject and we earnestly feel that this convention will have the best. The annual banquet, which will feature filet mignon, will be followed by top-flight entertainment.

The program for the ladies will be most pleasant and will feature a trip to the famous Atlantic City Racetrack on Friday.

The City of Atlantic City hardly needs describing. September is known as the "Golden Month" at the sea-shore. Why not take advantage of the "Golden Month" and turn it into a "Golden Opportunity" at the National Convention?

I take this opportunity to extend to you a cordial greeting and a hearty welcome to your convention.

See you at the seashore!

FREDERICK V TRAUT
1955 Convention Chairman

HERMAN L STEEN
(Geigy Dyestuffs Div)
Convention Co-chairman

DONALD B ROBINSON
(Para-Chem, Inc)
Executive Committee Secretary

Program

1955 AATCC NATIONAL CONVENTION

SPONSORED BY THE PHILADELPHIA SECTION: CHALFONTE-HADDON HALL: ATLANTIC CITY, N J

September 21, 22, 23 and 24

All functions at the Chalfonte-Haddon Hall except where noted

Wednesday, September 21

12:00 noon to 6:00 pm—REGISTRATION—Peverel Lounge

6:00 pm — NATIONAL COUNCIL MEETING — Bakewell Room

Thursday, September 22

9:00 am to 6:00 pm — REGISTRATION — Peverel Lounge

9:00 am to 12:00 noon — MEETING OF THE TECHNICAL COMMITTEE ON RESEARCH — Viking Room—Report on "Operation Q"

10:00 am to 10:00 pm—LADIES HEADQUARTERS —Sun Porch

12:00 noon to 6:00 pm—EXHIBITS—Lounge Floor

12:00 noon to 2:00 pm—OLNEY AWARD LUNCHEON—Rutland Room
Elliot Broadbent, *speaker*

2:00 pm to 5:00 pm — GENERAL TECHNICAL MEETING—Viking Room

Presiding: Arthur W Etchells, Hellwig Dyeing Corp

"The Use of Radioactive Tracers to Study the Interaction of Cellulose with Simple Salt Solutions and with Dyebaths"—Howard J White, Jr and Mary Moncrieff-Yeates, Textile Research Institute

"Catalysis in Blended Chemical Finshes"—D Donald Gagliardi, Gagliardi Research Corp

"Present Status of Theory of Dyeing"—Emery I Valko, Onyx Oil & Chemical Co

4:30 pm to 6:00 pm—LADIES' WELCOME PARTY —Rutland Room

Friday, September 23

9:00 am to 6:00 pm — REGISTRATION — Peverel Lounge

9:00 am to 12:00 noon—TECHNICAL MEETING—Viking Room

Symposium: "Bringing Synthetics Up to Date"

Presiding: Edwin J Grajeck, Collins & Aikman Corp

"Advances in the Dyeing & Finishing of Man-Made Fibers"—Paul L Meunier, E I du Pont de Nemours & Co, Inc

"The Finishers' Viewpoint"—John A Komninos, Waldrich Co

"Dyeing & Heat Treatment of Arnel Triacetate"—Fred Fortess, Celanese Corp of America

"High-Temperature Dyeing"—Ray J Andres, E I du Pont de Nemours & Co, Inc

"The Sandocryl Process for the Dyeing of Polyacrylonitrile Fibers"—Charles W Saalfrank, Sandoz Chemical Works, Inc

9:00 am to 12:00 noon—TECHNICAL MEETING —West Room

Symposium: "Laundering, Drycleaning & Garment Dyeing"

Presiding: William J Mooney, Pennsylvania Association of Dyers & Cleaners

"Measuring the Whitening Effects of Fluorescent Dyes and Perborate Bleaches on Cotton"—Margaret S Furry, U S Dept of Agriculture

"Launderable Textiles"—George H Johnson, American Institute of Laundering

"Finishing and Color Problems in Drycleaning"—Johne Parsley, Philadelphia Textile Institute

"Garment Dyeing in the United States Today"—Arthur C Teichner, Almore Dye House, Inc

10:00 am to 6:00 pm—EXHIBITS—Lounge Floor

10:00 am to 10:00 pm—LADIES' HEADQUARTERS—Sun Porch

12:00 noon—GOLF—Atlantic City Country Club, Seaview Country Club

12:30 pm—LADIES' LUNCHEON—Clubhouse, Atlantic City Race Track

Saturday, September 24

9:00 am to 6:00 pm — REGISTRATION — Peverel Lounge

9:00 am to 12:00 noon—TECHNICAL MEETING—Viking Room

Symposium: "Dyeing and Finishing"

Presiding: James L Fesperman, Jr, Cabin Crafts, Inc

"Wool Processing"—Jackson Bauer, Fred Whitaker Co

"A Study of Rayon in Tufted Carpeting"—L L Walmsley, D P Feyler, and W S Sollenberger, American Viscose Corp

"Soil-Resistant Treatment of Fabrics"—Jason M Salsbury, T F Cooke, Elliot S Pierce, and Philip B Roth, American Cyanamid Co

"Pad-Roll Dyeing System and Its Technical and Economical Application" — Bertil Mellbin, AB Svenska Textilmaskinfabriken

"Pressure Dyeing and Drying in a Closed System as Compared to Dyeing and Drying in an Open System"—F Thies, B Thies Co

9:00 am to 12:00 noon—TECHNICAL MEETING—West Room

Symposium: "Chemical Agents in Textile Processing"

Presiding: Hector C Borghetty, Rohm & Haas Co

"Continuous Bleaching of Cotton with Silicate-Free Peroxide Solutions"—B K Easton, Becco Chemical Div, and Paul Feldmann, Dan River Mills Inc

"The Principles and Practice of Color Stripping"—Walter C Lindsly and Nathaniel A Matlin, Rohm & Haas Co

"Relative Efficiency of Chelating Agents"—M E Chiddix, A C Signore, and G M Gantz, General Aniline & Film Corp

"An Evaluation of Mothproofers in Terms of Present-Day Trade and Consumer Requirements—E Wallace Birdsall, Geigy Dyestuffs

10:00 am to 3:00 pm—EXHIBITS—Lounge Floor

10:00 am to 10:00 pm—LADIES' HEADQUARTERS—Sun Porch

12:00 noon to 2:00 pm—ALUMNI LUNCHEON—Rutland Room

2:00 pm to 5:00 pm — INTERSECTIONAL CONTEST—Viking Room

"A Study of the Soiling of Natural and Manufactured Fibers from Aqueous Systems"—New York Section

"Dyeing of Wool with Direct Dyes"—Philadelphia Section

"Improvement of Crock Fastness in Naphthol-Dyed Fabrics"—Piedmont Section

"The Effect of Mercerization on the Crease-Resistant Properties of Cotton Fabric"—Rhode Island Section

6:00 pm—ANNUAL BANQUET—Carolina Room

Address by the Convention Chairman—Frederick V Traut

Address by the President—Raymond W Jacoby

Toastmaster—Ivor Griffith

Presentation of ADR Award—Percival Theel

Presentation of Intersectional Contest Awards—Earle D McLeod

Guest Speaker—Joseph Redding

LADIES PROGRAM

The Sun Porch of Haddon Hall has been designated as the Ladies Hospitality Room and members of the Convention Ladies Committee will be present at all times to welcome the visiting ladies, furnish information and make every lady's stay more pleasant while the Convention is in progress.

All lady visitors are urged to make this room their headquarters during their stay at the convention. In addition the Ladies Committee has planned the following Special Events for Lady Registrants:
Thursday Afternoon, September 22-4:30 PM—Ladies Cocktail Party - Rutland Room - Haddon Hall
Friday, 12:00 Noon—Trip to Atlantic City Racetrack including transportation, luncheon and admission to the Terrace, at no charge to our Lady Registrants.

NATIONAL OFFICERS OF AATCC

President ..... RAYMOND W JACOBY, Ciba Co, Inc, 627 Greenwich St, New York 14, N Y

Vice President (Central Atlantic Region) ..... GEORGE L BAXTER, Bradford Dyeing Association, 40 Worth St, New York 13, N Y

Vice President (Western Region) ..... JOSEPH H JONES, Phoenix Dye Works, 1965 Southport Ave, Chicago 14, Ill

Vice President (New England Region) ..... GEORGE O LINBERG, Synthron, Inc, Ashton, R I

Vice President (Southern Region) ..... WALTER M SCOTT, U S Dept of Agriculture, Washington 25, D C

Secretary ..... HAROLD C CHAPIN, Lowell Technological Institute, Lowell, Mass

Assistant Secretary ..... RICHARD R FREY, Lowell Technological Institute, Lowell, Mass

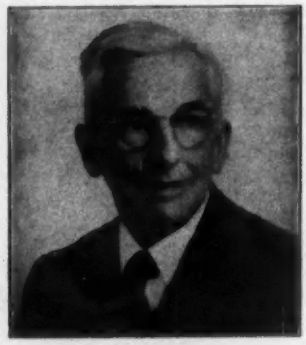
Treasurer ..... ALBERT E SAMPSON, National Aniline Division, Allied Chemical & Dye Corp, 150 Causeway St, Boston 14, Mass

Treasurer Emeritus ..... WILLIAM R MOORHOUSE, P O Box 352, South Yarmouth, Mass

Founder ..... LOUIS A OLNEY (Deceased)

Chairman of the Executive Committee on Research ..... LEONARD S LITTLE, 101 West 31st Street, Room 1500, New York 1, N Y

Director of Research ..... HAROLD W STIEGLER, Lowell Technological Institute, Lowell, Mass



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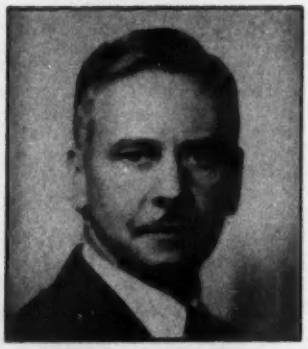
(AATCC)
Secretary

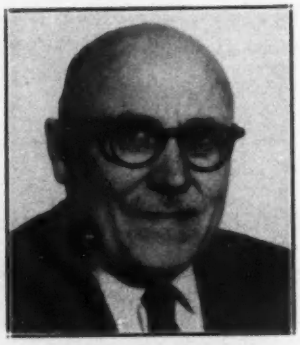
ALBERT E SAMPSON
(National Aniline Div)
Treasurer

RICHARD R FREY
(AATCC)
Assistant Secretary

WILLIAM R MOORHOUSE
Treasurer Emeritus



HAROLD W STIEGLER
(AATCC)
Director of Research



LEONARD S LITTLE
(Consultant)
Chairman, Executive Committee on Research

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Bibliography	W H CADY, *Chairman*
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Colour Index Marketing	A E SAMPSON, *Chairman*
Constitution and Bylaws	H C CHAPIN, *Chairman*
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Publicity	J A DOYLE, *Chairman*
QM—Air Force Dye Survey	W A HOLST, *Chairman*
Speakers' Bureau	M J BABEY, *Chairman*
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(Hellwig Dyeing Corp)
Chairman, Technical Program

PAST PRESIDENTS

(An asterisk follows the names of the deceased)

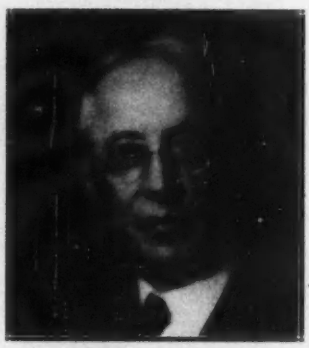
LOUIS A OLNEY* (Founder)
1922-1927

ELVIN H KILLHEFFER
1928-1930

P J WOOD
1931-1932

ROBERT E ROSE*
1933-1935

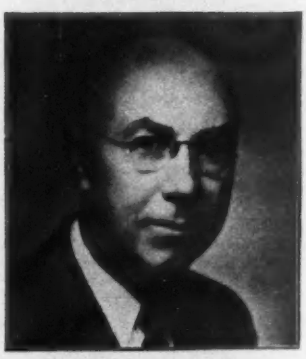
WILLIAM H CADY
1936-1937



ALBAN EAVENSON
1938-1939

CARL Z DRAVES
1940-1941

THOMAS R SMITH
1942-1943



WILLIAM D APPEL
1944-1946

HENRY F HERRMANN
1947-1949

C NORRIS RABOLD
1950-1952

J ROBERT BONNAR
1953-1954

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Chairman, Ladies

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(Hart Products Corp)
Chairman, Publicity

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Co-chairman, Registration

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Chairman, Reception

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Co-chairman, Registration

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MISS MARGARET HAYES
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MRS DONALD W ROBINSON
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ROBERT K JOHNSTON
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ALLEN SOMMERS
Hosiery Industry Weekly

MURRAY E SPRING
American Cyanamid Co

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Textile Chemical Co

J WILLIAM KIRK
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JOSEPH H JONES (Honorary)
Phoenix Dye Works

GEORGE O LINBERG (Honorary)
Synthron, Inc

WALTER M SCOTT (Honorary)
U S Dept of Agriculture

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E I du Pont de Nemours & Co, Inc

GOLF

Arrangements have been made for golfing privileges for those members who so desire.

Seaview Country Club will be available from September 21 to September 25.

Atlantic City Country Club will be available all day September 21 and September 22. On September 23 and September 24, because of the Sonny Fraser Memorial Tournament, it will be necessary to restrict playing time to after 3:00 PM.

To receive permission to play at either club, it is only necessary for the golfer to show his registration badge.

RECEPTION AND INFORMATION

Members of the Reception Committee will staff an information desk adjacent to Registration in the Peveral Lounge near the entrance to the exhibit. A card file will be kept on the names of registrants and their hotels. This committee will also supervise the printing and circulation of registration lists and special information during the Convention.

PERSONNEL SERVICE

The Association staff will maintain, without charge, a service headquarters on the 13th floor in Haddon Hall, for the purpose of introducing members to prospective employers.

Members seeking employment should, if possible, register with Harold C Chapin, secretary, AATCC, Box 28, Lowell, Massachusetts, before the Convention.

Prospective employers, representatives of educational institutions, and other interested parties, should register with the Service at the Convention, prior to arranging for interviews and consulting the records of applicants.

The Service will be available at the following times:

Thursday, Sept 22—2 pm to 5 pm

Friday, Sept 23—9 am to 5 pm

Saturday, Sept 24—9 am to 2 pm

Your Host——

The Philadelphia Section

CHARLES A SEIBERT

This brief historical record of the Philadelphia Section covers details of its organization and activities during 1922, the year in which it was formed; a brief review of achievements during the subsequent period; and a chronological list of its chairmen.

INTRODUCTION

THE Philadelphia Section, AATCC's second largest Section from a standpoint of membership, will serve as host to the National Convention once again as the Association's members and guests gather at the Chalfonte-Haddon Hall from Sept 22nd through the 24th. This marks the sixth time that the Section has served in this capacity, and with future Conventions scheduled for regional, rather than sectional, sponsorship, it appears to be the last.

The information which follows on the inaugural and very early period of the Section is designed to identify the persons intimately concerned and their contributions, because much of this information is not included in the *Year Books* and reports in the *American Dyestuff Reporter* of that time.

The most important items in the history of the Section subsequent to this early period may be found in the pages of the *Year Book* and the *Reporter*, however. These are available in some libraries, from certain charter members, and from Howes Publishing Co, Inc. The Section's members through the Secretary shall be pleased to endeavor to furnish omitted information on personal inquiry.

CHRONOLOGICAL SEQUENCE OF ORGANIZATION

JUNE 5, 1922

A petition to the Council for approval to form the Section was prepared by Elmer C Bertolet and signed by:

Sidney S Bailey, Jr	Fred L Nuttall
Elmer C Bertolet	Otto Poetzsch
Robert A Carter	Israel Reiner
Walter G Hamlen, Jr	Robert E Rose
Charles S Hollander	J Henry Shackelton
Leslie N Hood	Lawrence A Stead
Russell W Hunt	Percival Theel
Albert S Jones	Joseph L Wade
Ralph A MacIntyre	William J Wall
Carl E Medde	L DaCosta Ward
Edwin S Millspaugh	Howard R Watt
Eric J Monaghan	Morton H Wertheim
Charles E Mullin	Clarence C W Wilson

JUNE 9, 1922

The Council approved the petition and appointed Elmer C Bertolet, secretary *pro tem* to organize the Section.

NOVEMBER 10, 1922

An organization meeting was held at the Philadelphia Textile School with Elmer C Bertolet acting as chairman, *pro tem*.

Following a brief summary by Mr Bertolet giving the background which led to this meeting, a motion made by Mr Medde and seconded by Dr Hollander resulted in the election of Dr Rose as temporary chairman. A motion by Dr Hollander to proceed with the organization, to be known as the Philadelphia Section, was approved. Dr Rose, who was authorized to appoint a Nominating Committee, selected the following: P Theel, *chairman*, C E Medde, C E Mullin, and C S Hollander.

A motion was made by Mr MacIntyre, and seconded by Dr Hollander, to schedule meetings for the remainder of the season on the first Friday in the months of October, December, February, April and June at 8:15 pm. This was approved.

Following the recommendations of the Nominating Committee, the Section elected the following officers:

Chairman: Robert E Rose
Treasurer: Chas S Hollander
Secretary: Elmer C Bertolet
Sectional Committee: Ralph A MacIntyre, Donald S Ashbrook, Carl E Medde and Charles E Mullin.

The Chairman then appointed the following committees:

By-Laws: Chas S Hollander, *chairman;* Walter G Hamlen, Jr
Program: Chas E Mullin, *chairman;* Ernest C T Bick, Edwin L Duhring, George H Schuler
Membership: Percival Theel, *chairman;* Ralph A McIntyre, Eric J Monaghan, William J Wall.

Mr Bertolet, representing the Philadelphia Textile School, offered the facilities of the School for immediate future meetings of the Section. The offer was accepted with thanks.

Membership application forms were distributed to all present with the request that they be used in an effort to increase the membership.

On motion, the meeting adjourned at 10:15 pm with the next meeting scheduled for Friday, January 5, 1923 at the Philadelphia Textile School.

Those present at the meeting were:

Sidney S Bailey, Jr	Chas E Mullin
Elmer C Bertolet	J H McGlinchey
Edwin L Duhring	Fred L Nuttall
Walter G Hamlen, Jr	George W Pressell
Chas S Hollander	Frank L Remlein
Russell W Hunt	R E Rose
Ralph A MacIntyre	George H Schuler
Carl E Medde	Daniel Shea
Eric J Monaghan	Percival Theel

ACHIEVEMENTS

To date the Philadelphia Section has held 172 recorded technical program meetings with prepared papers and discussions by at least 250 persons on a wide variety of technical subjects. Supplementing this are its annual outings, which are held each Spring.

On the national level, the Philadelphia Section has participated actively in the annual Intersectional Contest, having been awarded first prize in 1943; second prizes in 1941, 1946, 1947 and 1952; and third prizes in 1940, 1942, 1948, 1950, 1951 and 1953.

The Section has yielded the national Association three presidents: Robert E Rose (deceased), who served in 1933, 1934 and 1935; Alban Eavenson, 1938-1939; and William D Appel, 1944-1945-1946.

Three Section members have served as national vice presidents: Elmer C Bertolet, 1936-1937; Charles A Seibert, 1942-1943-1944; and Arthur W Etchells, 1950-1952-1953.

The Olney Medal has gone to two men who were members of the Section at the time it was awarded: Milton Harris in 1945 and Charles A Seibert in 1949. This year's Olney Medalist, Miles A Dahlen, becomes the third Section member to be so honored.

As previously mentioned, this year marks the sixth time that the Section has served as host to the National Convention. Previous roles were in 1924, 1929, 1937, 1944, and 1949.

CHRONOLOGICAL LIST OF CHAIRMEN

Chairmen	*Year*
Robert E Rose	1922
Charles S Hollander	1923
*Elmer C Bertolet	1924
Carl E Medde	1925
Ralph A MacIntyre	1926
Elmer C Bertolet	1927
A Moody Burt	1928-29
Charles A Seibert	1930-31
William A Stringfellow	1932-34
Robert A Bruce	1935
Robert E Sullivan	1936
Herbert S Travis	1937-38
William Ebersold	1939
Harold B Dohner	1940
John F McCoy	1941
Albert E Jones, Jr	1942
James P Conaway	1943
Boyce C Bond	1944
Arthur W Etchells	1945
Curt R Baeringer	1946
Walter F Fancourt 3rd	1947
Arthur M Gordon	1948
James Dixon	1949
Richard B Stehle	1950
A E Raimo	1951
Edward C Diehl	1952
Harry L Morgan	1953
Frederick V Traut	1954-55

* Elmer C Bertolet has been chairman emeritus of the Philadelphia Section since 1934.

1955 ADR AWARD WINNER TO BE ANNOUNCED AT ANNUAL BANQUET

THE winner of the fifth annual AMERICAN DYESTUFF REPORTER Award will be announced at the annual banquet of the National Convention in Atlantic City. Judges for this year's contest, appointed by the Association's Publications Committee, are: Alfred R Macormac, Agricultural Research Center, *Chairman;* James D Dean, retired, and Robert W Joerger, Franklin Process Co.

The Award was endowed by the Howes Publishing Company as a memorial to Alfred P Howes, founder of the AMERICAN DYESTUFF REPORTER. Its purpose is to encourage the presentation of the best possible papers before local and national meetings of the Association. The Award, $200 annually, is presented to the author or authors of the paper considered best in the opinion of the judges. Any technical paper presented before a local or national meeting of the AATCC and published in the *Proceedings* as they appear in the AMERICAN DYESTUFF REPORTER is eligible with the following exceptions: Intersectional Contest papers, papers by employees of the AATCC, reports of work substantially subsidized by AATCC, or reports of research committees. It is a condition of eligibility that the paper have its first publication in the *Proceedings.* Papers published in the *Proceedings* from July 1st of one year to June 30th of the next year are considered in each judging period.

The first presentation of the ADR Award was made at the annual banquet of the New York Convention on October 19th, 1951 at the Hotel Statler, New York, to Mason Hayek and Fred C Chromey of the Jackson Laboratory of E I du Pont de Nemours & Co, Inc. The paper chosen was entitled "The Measurement of Static Electricity" and was published in the March 5, 1951 issue. It had been presented before the Auxiliaries and Testing Group Meeting at the Portsmouth National Convention in 1950 by Dr Hayek.

The second presentation of the Award was made at the annual banquet of the Boston Convention on November 8th, 1952 at the Hotel Statler, Boston, to Charles J Lyle, Joseph J Iannarone and Robert J Thomas of the Technical Laboratory, E I du Pont de Nemours & Co, Inc. The paper selected was "High-Temperature Dyeing of New Synthetic Fibers" which was published in the September 17, 1951 issue and presented by Dr Thomas before the Rhode Island Section in Providence on May 25, 1951.

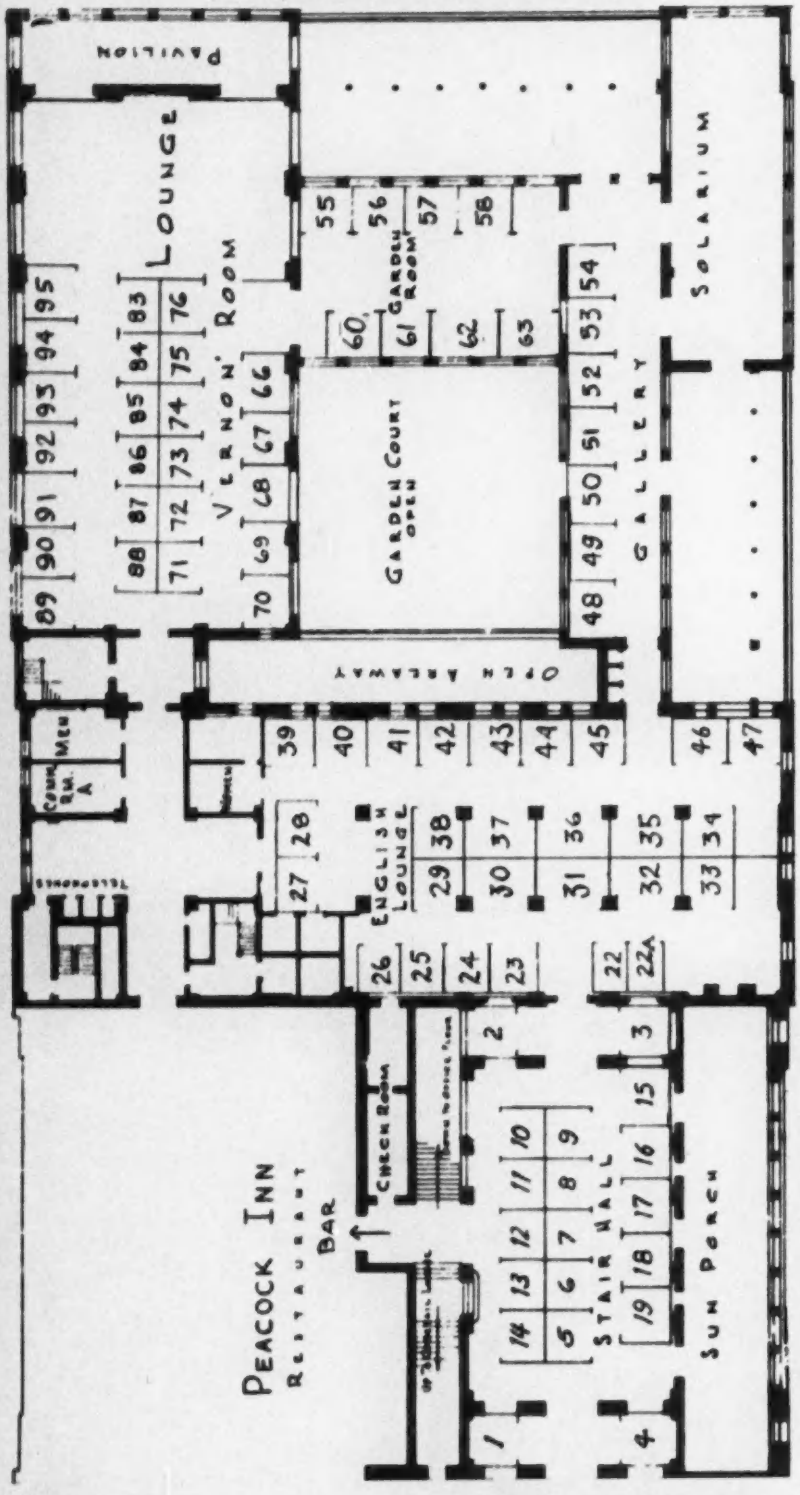
The third presentation was made to Robert H Blaker of the Jackson Laboratory, E I du Pont de Nemours & Co, Inc, at the annual banquet of the Chicago Convention on September 19th, 1953 at the Conrad Hilton Hotel in Chicago. The paper, published in the February 2, 1953 issue, was entitled "Principles of Copper Dyeing of Polyacrylonitrile Fibers: The Controlled Redox-Potential Method" and was presented at the 1952 convention held in Boston.

The fourth presentation was made to Charles L Zimmerman, group leader for American Cyanamid Company's dyestuff department, at the annual banquet of the Atlanta Convention on September 18th, 1954 at the Atlanta Biltmore Hotel. The paper which won the award for Mr Zimmerman was entitled "The Application of Dyes to Textile Fibers at High Temperatures" and was published in the September 14, 1953 issue. This paper was presented before a meeting of the New York Section on April 17, 1953.

1955 DYEING AND FINISHING EXHIBITION

EXHIBIT AREA AT CHALFONTE-HADDON HALL

(All exhibits on Lounge Floor level)



List of Exhibitors

AATCC ..... 55, 56, 57, and 58
Alco Oil & Chemical Corp 30
Alliance Color & Chemical Co . 37 and 38
Althouse Chemical Co, Inc 10
Amalgamated Chemical Corp .. 73 and 74
American Bemberg 32
AMERICAN DYESTUFF REPORTER 5
American Viscose Corp 31
America's Textile Reporter 4
Atlas Electric Devices Co 68
C A Brinkmann & Co 19
Carbide and Carbon Chemicals Co ..... 41 and 42
Celanese Corp of America .... 52 and 53
The Chemstrand Corp ..... 50 and 51
Clark Publishing Co 47
Cranston Print Works Co. 48
Curry and Paxton, Inc 72
Custom Scientific Instruments, Inc .. 11
Daily News Record 46
Diamond Crystal Salt Co 88
Dow Corning Corp 16
Gabb Special Products 44
Gaston County Dyeing Machine Co . 36
General Electric Co 71
B F Goodrich Chemical Co . 61, 62 and 63
Goodyear Tire & Rubber Co, Inc 13 and 14
Hermas Machine Co 66
The Hilton-Davis Chemical Co. 93 and 94
E F Houghton & Co 2
Instron Engineering Corp 6
International Salt Co, Inc 35
Kelco Co 9
Kennett Equipment & Machinery Co 34
McKiernan-Terry Corp 45
Metro-Atlantic, Inc 12
Morningstar, Nicol, Inc 17
Nopco Chemical Co 7
Olin Mathieson Chemicals Corp 29
Pad-Dye Corp 85
Pittsburgh Coke & Chemical Co. 95
Radiant Heat, Inc 54
Rohm & Haas Co ..... 39 and 40
Sandoz Chemical Works, Inc .. 23 and 24
The Sheffield Corp 8
Smith, Drum & Co 1
Testfabrics, Inc 60
Textile Age 15
Textile Industries 49
Textile World 89
United States Testing Co, Inc .. 75 and 76
Versenes, Inc ..... 27 and 28
Virginia Smelting Co ..... 25 and 26
Wallerstein Co, Inc 43
Walton Laboratories, Inc 67
Edwin L Wiegand Co ..... 22 and 22A
Jacques Wolf & Co 33

EXHIBIT DESCRIPTIONS

ALCO OIL AND CHEMICAL CORP

Trenton Ave and William St
Philadelphia 34, Pa.
Booth 30

Products to be exhibited include: Vulcanol, for latex upholstery backsizing and latex carpet backing; Alcogum AN-10, latex thickeners and stabilizers (sodium polyacrylate); Vulcarite, latex compounding chemicals (antioxidants, etc); Vulcacure, latex ultra accelerators (dithiocarbamates); latex foam rubber, various applications. New products, to be featured, include: Alcogum PA-10, a new sodium polyacrylate latex thickener and stabilizer, and Vulcanol CM-3007, a backsizing compound for nonstaining of nylon and acetate fabrics.

In attendance — Arthur E Jones, vice president; Dr O B Hager, director of research; C Eugene Cain, chief chemist — sales service; F McCawley Tolin, director of sales; John P Seguin, John W Berg, and John B Winkler, sales representatives; John M Allan, technical sales.

ALLIANCE COLOR & CHEMICAL CO
BLACKMAN-UHLER CO

Divisions of The Andover Co
Newark, N J and Spartanburg, S C
Booths 37 and 38

The booths will be decorated with fabrics dyed and printed with the companies' products. There will also be a product display featuring Azoene fast color bases, Azoene fast color salts, Azogen printing colors and naphthols. Members of the AATCC will be invited to try a novel game in which, by a "do-it-yourself" demonstration with these products, prizes can be won.

In attendance — (Alliance Color and Chemical Co) — Harold W Coward, president; Harold W Rose, secretary-treasurer; W Richard Cake, assistant to the president; Ernest Dion; William Hoffman. (Blackman-Uhler Co) — P C Blackman, president; Edmund R Roper, treasurer; C H Ratterree, secretary; Joe Gaffney; Howell Maguire.

ALTHOUSE CHEMICAL CO, INC

Subsidiary of Crompton & Knowles Loom Works
Reading, Pa
Booth 10

This space will be used as a reception headquarters and information center.

AMALGAMATED CHEMICAL CORP

Rorer and Ontario Sts
Philadelphia 34, Pa
Booths 73 and 74

Chemicals for the scouring, dyeing, and finishing of all types of hose, piece goods and sweaters will be exhibited.

In attendance — Harold B Dohner, president; Robert A Bruce, vice president and treasurer; Herman B Childers, southern sales technician; Charles E Seel and George C Harkins, sales technicians; John M Jester, Jr, secretary and chief chemist; Alton P Siddons, technician.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

Research Headquarters
Lowell Technological Institute
Lowell, Mass
Booths 55, 56, 57 and 58

The AATCC exhibit will be devoted for the most part to a display of materials, fabrics and garments on exposure plaques and mannikins respectively, which have been subjected to the effects of an atom bomb blast in the Nevada desert.

The display will vividly illustrate the differences in heat absorption as affected by distance from ground zero, fiber type, color, and number of layers of test fabric. Of particular interest will be the pair of male mannikins, one of which shows considerable scorch area, while the other, which had been protected by being wrapped in an ordinary white bed sheet, is virtually unscathed.

In addition to the tested fabrics, colored 35-mm transparencies of plaques and mannikins both before and after testing, as well as views of the test site, will be available for projection.

The Accelerotor, which has attracted considerable attention at previous exhibits, will again be on display. The latest model of this instrument has a more easily read tachometer, which provides for more accurate speed control. Extensive work on abrasion studies has been carried out during the past year in an effort to arrive at better reproducibility. One-shot abrasive liners and experimental foam and sponge-rubber inner liners will also be shown.

Charts and specimens illustrating extensive work carried out under the direction of the Committee on Fastness to Light will be shown. They will include examples of fading produced by fluorescent lamps, by daylight at hours other than those presently recommended by borma sunlight testing, and by experimental Fade-Ometers.

In attendance — C A Seibert, research associate from Salem, N J; and H E Glidden, G J Mandikos, and G R Thompson from research headquarters at Lowell.

AMERICAN BEMBERG

261 Fifth Avenue
New York, N Y
Booth 32

Skeins and cones of Bemberg novelty yarns both natural and dyed and fabrics showing various end uses of these yarns will be on display. Screen-printed Bemberg tie fabrics in acid colors, which are comparable to acetate in brightness, will be shown.

The display also will include knitted ties . . . cotton, viscose, and Bemberg illustrating deeper dyeing properties of Bemberg.

In attendance — Lon Nave, yarn technician; Mel Alpert, dyeing and finishing technician; and Marion Geyer, assistant advertising manager.

AMERICAN DYESTUFF REPORTER

44 East 23rd Street
New York 10, N. Y.
Booth 5

The official publication of the American Association of

Textile Chemists and Colorists, as well as the 1955 *Technical Manual and Year Book of the AATCC,* will be featured.

In attendance — Norman A Johnson, editor; Charles A Whitehead, managing editor; Myron D Reeser, business manager; Herbert A Stauderman, advertising manager; James A Doyle, promotion manager.

AMERICAN VISCOSE CORP

P O Box 455
Marcus Hook, Pa
Booth 31

This exhibit will feature a display of rayon fabrics and garments having durable "wash and drip dry" characteristics. An actual demonstration of these qualities has been arranged. There will also be featured rayon tufted carpeting and samples showing the value of soil resist treatments as well as other items of interest to the textile industry.

In attendance — J A Woodruff, L L Walmsley, I H Welch, W S Sollenberger, D P Feyler and W E Belanger.

AMERICA'S TEXTILE REPORTER

286 Congress Street
Boston, Mass
Booth 4

Textile publication.

ATLAS ELECTRIC DEVICES CO, INC

4114 North Ravenswood Ave
Chicago 13, Ill
Booth 68

On display will be the Fade-Ometer, Launder-Ometer, Scorch Tester and Accelerotor.

In attendance — John W Lane, J E Norton, R R Metzinger and Leo L Monaghan.

C A BRINKMANN & CO

378-380 Great Neck Rd
Great Neck, L I, N Y
Booth 19

This exhibit will feature the latest models of rapid-weighing single- and double-pan analytical balances new types of microscopes with directly attached photomicrographic devices with built-in exposure meters, reflection meters and pH controllers. Also apparatus for paper electrophoresis suitable for work with dyestuffs, reflected light microscopes and refractometers of radically novel design.

CARBIDE AND CARBON CHEMICALS CO

A Division of Union Carbide and Carbon Corp
30 East 42nd St
New York 17, N Y
Booths 41 and 42

Featured in this exhibit will be information on chemicals that help eliminate static, aid dyeing and lubrication, and improve surface activity. In addition there will be information on chemicals useful in improving fibers and making new resin finishes. A special technical information booklet which reviews some of Carbide's newer developments in textile chemicals, will also be available.

CELANESE CORP OF AMERICA

P O Box 1000
Summit, N J
Booths 52 and 53

Fabrics made from Arnel triacetate fibers and yarns, acetate, and Fortisan will be displayed.

In attendance — Dr A F Tesi, assistant to technical director, textile division; F Fortess, section head, dyeing and finishing research; Dr V S Salvin, dyeing and finishing research; P Duggan and B Pimentel, customer service; H Elsom, evaluation research; G Ward, dyehouse trials.

THE CHEMSTRAND CORP

Decatur, Ala
Booths 50 and 51

This exhibit will show various blends of Acrilan acrylic fiber with both natural and other man-made fibers. The integrated display will show actual finished fabrics and garments displayed on mannequins. Literature and other pertinent data will be available. Chemstrand nylon will also be exhibited.

In attendance — Walter H Hindle, associate director of research in charge of dyeing and finishing; Charles Thompson, group leader — Acrilan dyeing application group; E V Burnthall, group leader — nylon application group; Robert L Amsler, John C Oatfield, and S Jack Davis, textile research division.

CLARK PUBLISHING CO

P B Box 1225
Charlotte, N C
Booth 47

Textile publications

CRANSTON PRINT WORKS CO

Cranston, R I
Booth 48

This exhibit will feature the new Dri-Smooth finish for cottons. A Westinghouse Laundromat and dryer will be used for a continuous laundry demonstration of the wash-and-wear qualities of cottons with the Dri-Smooth finish. Garments with and without the Dri-Smooth finish will be washed together for contrast. These cottons are said to be the first than can actually be machine washed and fluff dried, then worn without ironing. Pictures of the three Cranston plants with close-ups of various printing and finishing operations will be used for background. Giveaways, such as ties and place mats made of Dri-Smooth finished cottons, will be distributed. Literature concerning Dri-Smooth and the Cranston Print Works will be available.

In attendance — from Cranston's New York office — Godfrey Rockefeller, president; Peter Blair, advertising manager; from Cranston's Rhode Island plant—Edward Lawrence, research director; Robert Phillips, assistant research director; from Westinghouse — home economist.

CURRY & PAXTON INC

230 Park Ave
New York 17, N Y
Booth 72

Equipment of The Tintometer Limited of England will be displayed including the newly redesigned Lovibond Schofield Tintometer and a complete range of Lovibond permanent glass standards set in plastic or aluminum holders. Newest models of analytical balances, through August Sauter of New York, Inc, will also be featured.

In attendance — Hayes G Shimp, Jr, manager; John W Smith and T G Walshe, representatives; F G Heath, The Tintometer Limited, is coming from England expressly to attend the exhibit.

CUSTOM SCIENTIFIC INSTRUMENTS, INC

541-543 Devon St
Arlington, N J
Booth 11

The following instruments will be exhibited: Celanese Wrinkle Tester, for evaluating the resilience and wrinkle behavior of fabrics under conditions very similar to those occurring in actual use; Electrical Resistance Tester, developed to measure the electrical resistance of fibers, films and fabrics; C & R Tester, which, by a selection of proper pressure feet, will meet a number of ASTM standards for thickness of asbestos, knit goods, woven glass fibers, pile floor coverings, backing, solid electrical insulation, paper, rubber, etc; CSI Surface Abrader, for reproducing either unidirectional or multidirectional abrasion of uniform intensity over the abraded area; High Speed Recording Tensiometer, a complete unit for accurate measurements and proper regulation of yarn tension which is also applicable to the study of tension variations in fine flexible wire or to the study of surfaces in contact with a running yarn or wire system; Electrostatic Voltmeter, a new instrument to measure quantitatively the static electrical charges and indicate the polarity of these charges of fabrics and like materials during various manufacturing processes.

In attendance — H J Bultman, Jr, sales manager; R J Novotny, vice president.

DAILY NEWS RECORD

7 East 12th St
New York 3, N Y
Booth 46

Textile publication.

DIAMOND CRYSTAL SALT CO

St Clair, Mich
Booth 88

"Pure as the purest diamond" will be the theme of this exhibit featuring high purity, Alberger Process Salt, as a dyeing aid. There will be a collection of replicas of the world's most valuable and fabulous diamonds.

In attendance — R M Davenport, technical director; C W Schornstheimer, sales associate — industrial; S S Meilstrup, sales manager; and others.

DOW CORNING CORP

Midland, Mich
Booth 16

Exhibited will be "Silicones for the Textile Industry." The exhibit will feature Sylmer, the silicone finish for decorative fabrics; Dow Corning Silicone Finishes for garment fabrics; silicone defoamers; and high temperature lubricating greases. Special emphasis will be placed on Dow Corning F-121, a semipermanent release coating that reduces adhesion and build-up of sizing and coating materials on drying cans, rolls and slashers.

In attendance — F L Dennett, manager, fiber treatment laboratories; R A Ford, assistant manager, fiber treatment laboratories; E M Eddington, fiber treatment laboratories; W D Dicome, assistant manager, textile industry sales; N C Foster, assistant manager, Dow Corning's New York office; J J O'Neil, R E Knopf, C E Gibson, R H Montgomery and R M Dameron, technical sales representatives.

GABB SPECIAL PRODUCTS

Division of the E Horton & Son Company
Windsor Locks, Conn
Booth 44

This exhibit will be a display of modern mixing equipment including different models of the Shear-Flow Mixer. In actual operation will be a newly-designed laboratory model of the Shear-Flow Mixer.

In attendance — George S Chiaramonte, general sales manager; Robert P Genovesi, advertising manager.

GASTON COUNTY DYEING MACHINE CO

Stanley, N C
Booth 36

Textile laboratory dyeing equipment for yarn, both spun and filament, cakes, tow, top and raw stock, will be shown.

In attendance — G H Hacker and Gordon Hacker.

GENERAL ELECTRIC CO

1 River Rd
Schenectady, N Y
Booth 71

The recording spectrophotometer will be exhibited.

B F GOODRICH CHEMICAL CO
A Division of the B F Goodrich Company

Rose Bldg., 2060 E Ninth St
Cleveland 15, O
Booths 61, 62 and 63

This exhibit will include: the use of Hycar nitrile latex as a size and finish for textiles; use of Hycar urea formaldehyde for crease-resistant finishes; nonwoven fabrics bonded with Hycar and Keon latices; solution dyeing of synthetic fibers with Harmon colors; textile processing aids.

In attendance — N H Sherwood, senior technical man, textile finishes; W H Schleonbach, product engineer, Hycar and rubber chemical sales; R E Welch, product engineer, plastic materials sales; G A Mentzer, public relations; Dr B M G Zwicker, director, new products planning; R C Bascom, field sales manager, Hycar and rubber chemical sales; T C Culver and P C Cramer, representatives, Hycar and rubber chemical sales.

THE GOODYEAR CHEMICAL DIV
The Goodyear Tire and Rubber Company, Inc

Akron 16, O
Booths 13 and 14

This exhibit will be devoted to textile applications for the Chemigum (oil resistant) Latices, Pliolite (styrene type) Latices, and Pliovic (vinyl copolymer) Latex. Applications for Pliovic AO, a vinyl dispersion resin, will also be exhibited. Samples of products which have been prepared by incorporating these products as sizes, finishes, coatings, saturants, or binders will be on display. End products illustrating these applications will include nonwoven fabric, denim, awning cloth, carpet, printed cotton, and others. Two new Chemigum small particle size latices will also be introduced.

In attendance — C O McNeer, general sales manager; W F Gerrow and J W Bear, district managers; W Kelly, G H Campbell, A R Merritt, J Brice, E Scott, I N Lanning and J R Houlette, special representatives; W Welch, development representative.

HERMAS MACHINE CO

225 Warburton Ave
Hawthorne, New Jersey
Booth 66

High-speed mixers for chemicals will be shown.

In attendance — G P Mason, president; R R Simpson, sales manager.

THE HILTON-DAVIS CHEMICAL CO
Division of Sterling Drug Inc

2235 Langdon Farm Road
Cincinnati 13, O
Booths 93 and 94

This exhibit will consist of 3 revolving pylons, each featuring a different theme. The first will feature Hiltone LC Pigment Printing Colors which minimize crocking; the second will have a wheel on which are mounted large color swatches, representing nine different dyestuffs, to give unusual color effects when rotated; the third will be a display of three new Hiltone Red Pigments which are fast to drycleaning. In each pylon there will be several small gold bird cages containing rare tropical birds, depicting "Locked-In" Colors. A large bird cage suspended on the outside of the booth will contain a live rare tropical bird which will be given away at the end of the Convention.

In attendance — Nelson S Knaggs, vice president in charge of sales; George N Nickles, textile chemist; The Hilton-Davis Chemical Co — S Y Stribling III, manager, Greenville; Donald J Eccleston, manager, Providence; William A Green, salesman, Providence; William S Pearson and John A Darsey, salesmen, Greenville.

E F HOUGHTON & CO

303 W Lehigh Ave
Philadelphia 33, Pa
Booth 2

A versatile line of Cerfak and Surfax surface-active agents for processing operations will be featured. Also to be exhibited will be modern Resonet resin finishes, the Softex series of anionic and cationic softeners, and Sulfol stock lubricant. Houghton's Anti-Static Agent, developed to aid production by eliminating or minimizing static electricity in high-speed operations, will also be displayed.

In attendance — C B Kinney, manager of textile sales development department; J R Clendenning and Orum R Kerst, sales managers; O H McClay, J E McLaughlin and H E Peterson, technical sales representatives; Bernard Menin, supervisor of textile application research.

INSTRON ENGINEERING CORP

440 Hancock Street
Quincy 71, Massachusetts
Booth 6

The newly-developed Table Model Tensile Testing Instrument will be exhibited. This is an electronically operated precision instrument offering the same scope of versatility, accuracy, and sensitivity of the floor model varieties.

In attendance — George S Burr, vice president; Henry W Cook, sales manager.

INTERNATIONAL SALT CO
Scranton, Pa
Booth 35

This booth will feature the Lixator and the Lixate Process. It is stated that the Lixate Process has been widely accepted by the textile industry as it produces from economical rock salt a clear, pure, fully saturated brine. This exhibit will also feature Sterling TNA5 which is claimed to be an efficient and economical replacement, pound for pound, for anhydrous sodium sulfate in a neutral dyebath. TNA5 is neutral and readily soluble in either hot or cold water.

In attendance — James K Gearhart, advertising and merchandising manager; Wallace E Ryon, district manager, Philadelphia office; Norman M Agnew, Southern development engineer; Albert J Hulsebosch, Oliver W McKeown, and William W Harris, Jr, sales engineers.

KELCO CO

31 Nassau St
New York 5, N Y
Booth 9

This exhibit will consist of a display of goods having been printed with Keltex, Keltex S and Keltone (the latter two products were introduced to the textile printing trade during 1955) as the print paste thickeners. A miniature demonstration of block printing will be given.

In attendance — F Habersberger and J Politi, textile chemists; I L Blanchard and K L Tallman, district technicians.

KENNETT EQUIPMENT AND MACHINERY CO

Kennett Square, Pa
Booth 34

This exhibit will feature the newest materials handling equipment for use in dyeing and finishing plants. Stainless steel box type trucks, as well as color tubs, will be shown. Photographs of new knitwear wetting-out and washing tanks will be displayed.

In attendance — C H McKaig, vice president; J H Adams, sales representative; M C Seldomridge, superintendent.

McKIERNAN-TERRY CORP

100 Richards Ave
Dover, N J
Booth 45

This exhibit will consist of photographs of textile finishing machinery and descriptive bulletins — open width washers, mangles and saturators.

In attendance — Carl W Shattuck, vice president; Kenneth S Johnson, chief engineer, textile division; B M Jones, sales representative, New England States; Bernard Kaiser, sales representative, Central States; Alexander F Schenck and John R Schenck, sales representatives, Southern States.

METRO-ATLANTIC INC

Centredale 11, R I
Booth 12

This exhibit will emphasize newly-developed products, along with newly-developed processing methods and testing techniques. Among the products to be featured are the following: the new series of modified thermosetting resins — Emboset Loclor, Emboset B and Emboset NR; the new series of durable water repellents — Ranedare R, Ranedare C and Ranedare S; Dacro-Dye for dacron dyeing; other new developments in dyestuffs. Processing equipment will be in operation.

In attendance — Albert Castka, Wyckoff, N J; Joseph Weldon, Cranston, R I; James C Shore, assistant vice president and technical director.

MORNINGSTAR, NICOL, INC

630 W 51st St
New York 19, N Y
Booth 17

Types of products to be shown include: finishing compounds; warp sizing compounds; printing gums and thickeners; natural water-soluble gums; starches, starch derivatives, dextrines; polyvinyl acetate emulsions. Fabrics finished with these products, and examples of work done with printing gums and synthetic resin finishes will be shown.

In attendance — R P Morningstar, technical department; Herbert D Harries, textile laboratory; Lee Kritzer, textile sales department; John Snoop, technical field representative.

NOPCO CHEMICAL CO

110 Fuller St
Harrison, N J
Booth 7

The products to be featured in this exhibit are the Nopco warp sizing chemicals, including Nopocosize N for nylon and Nopcosize D for Dacron. Also featured will be the Nopco antistatic agents, including Nopcostat 56-C for processing woolens and worsteds, and Nopcostats AS-40, LV-40, LL and LLS for processing natural fibers, synthetics and blends. Technical bulletins on these and other Nopco products will be available.

OLIN MATHIESON CHEMICAL CORP

Mathieson Bldg
Baltimore 3, Md
Booth 29

A variety of organic and inorganic chemicals will be on display.

In attendance — Derek Richardson, assistant sales manager, industrial chemicals division; Norman Schultze, manager, organic sales services, industrial chemicals division; Gordon Smith, sales representative, industrial chemicals division; J F Carey, district sales manager, industrial chemicals, Charlotte; Roy Smart, sales representative, industrial chemicals division, Atlanta.

PAD-DYE CORP

65 Crosby Place
Paterson, N J
Booth 85

This exhibit will feature the demonstration of a new complete line of pad-dyeing colors suitable for padding of cellulose acetate, nylon and mixed fabrics. It is claimed that cloth of each type, when padded, has properties equivalent to goods dyed by conventional methods. Pad-dyeing with Pad-Dye colors is said to be more economical and they are suited for continuous color processes by either the pad-steam or pad-hot water methods. Technical information and demonstrations will be available.

In attendance — Otto Poltersdorf, chemist; Rudolph Reig, president; Isadore Waks.

PITTSBURGH COKE & CHEMICAL CO

Fine Chemicals Division—Dyestuffs
P O Box 408
Spartanburg, S C

Booth 95

Pictures of the Bond Machine as well as fabrics dyed on the 60-inch range will be displayed. A model of the Neville Island Plant will also be shown.

In attendance — R M Locke, sales manager; K C Ruppenthal, technical supervisor; B C Bond, sales supervisor; S W Freeman, A F Beane, T P Caldwell, and C M Lindsay, salesmen; Al Medas, chief colorist.

RADIANT HEAT, INC

87 Hunt St
Central Falls, R I

Booth 54

A radiant heat oven for curing, heat-setting, pleating, laminating, coating and other processes requiring high temperatures will be shown. Temperatures to 1000°F are controlled to within 1° and with constant radiation.

In attendance — Fred Weller, president; Thomas Craft, superintendent.

ROHM & HAAS CO

Washington Square
Philadelphia 5, Pa

Booths 39 and 40

The dominant theme of this exhibit will be "Put Life in Your Cottons" — the resin treatment of dress goods and other cotton fabrics to make them wrinkle-resistant. The fast-drying properties of fabrics so treated and the ease with which they can be ironed also will be dramatized. An addition to the Rhoplex family of aqueous dispersions of acrylic resins will be a new product on display.

In attendance — W J Thackston, Jr, sales manager, textile chemicals department; H F Lawton and H C Borghetty, assistant sales managers, textile chemicals department; R G Thomas, assistant to sales manager; H S Travis, manager, Providence office; W A Wardell, assistant manager, Charlotte office; R G Lawrence, J T Taylor, J M Schandler, T G Sloan and J J Bernard, technical representatives.

SANDOZ CHEMICAL WORKS, INC

61-63 Van Dam Street
New York 13, N Y

Booths 23 and 24

Profit opportunities provided the textile industry thru new dyestuffs and chemicals will be the theme of this exhibit.

In attendance — F P Mackinney, C Worthen, J Armstrong, J Goldston, R Schaefer, A Carbone, F Casey, J Ormiston, W H Klein, H Rollins, A Koch, R Nebelung, N MacNeil, R Schwarz, N Cohen, H Gendreau, H Hennig, C Saalfrank, H R Walker, C H A Schmitt, W Luthy, W Taylor.

THE SHEFFIELD CORP

Box 893
Dayton 1, O
Booth 8

The following instruments, which have been developed in the past year, will be on display: The Sheffield Micronaire, Sheffield Automated Micronaire, Dye Package Density Comparator, Neptel Yarn Imperfection Counter.

In attendance — Wm I Wilt, general manager, std production instrument division; Jerome M Price, sales engineer.

SMITH, DRUM & CO

432 West Allegheny Avenue
Philadelphia 33, Pa
Booth 1

A single-package capacity, high-temperature dyeing machine for processing synthetics and natural fiber yarns will be displayed. This machine will process a standard package wound on ⅝" or 1⅝" dye tubes, spring wound package and/or raw stock at both normal or elevated temperatures.

In attendance — Robert N Smith, Al Bagian, Albert P March, Robert W Foltz.

TESTFABRICS, INC

55 Van Dam St
New York 13, N Y
Booth 60

On display will be fabrics and yarns, ready for laboratory use. A demonstrator will show the weighing of skeins and be generally attractive! Catalogues and swatch booklets will be available. The background will consist of large photos of skein manufacturing.

In attendance — Werner Klaus, president; H Levitt, secretary-treasurer; Mrs Marianne Blunck, demonstrator.

TEXTILE AGE

22 W Putnam Ave
Greenwich, Conn
Booth 15

Textile publication.

TEXTILE INDUSTRIES

806 Peachtree St, N E
Atlanta, Ga
Booth 49

Textile publication.

TEXTILE WORLD

330 W 42nd St
New York 36, N Y
Booth 89

Textile publication.

(Concluded on Page P605)

1955 Intersectional Contest

FOUR Sections will present papers in this year's Intersectional Contest, which will be held September 24th at the Chalfonte-Haddon Hall, Atlantic City, N J, as one of the feature events of the 1955 AATCC Convention.

The Washington Section, last year's first-prize winner, will not compete in 1955.

The Rhode Island Section maintains a commanding lead in the number of cumulative points attained since the inception of the Contest. Assigning values of 5, 3 and 2 for the first, second and third places respectively (the same ratio in which prize money is awarded), the cumulative standing is as follows:

Rhode Island—40
New York—33
Philadelphia—29
Northern New England—23
Piedmont—15
Southeastern—5
Washington—5

The record of winners, since the contest was inaugurated in 1940, is as follows:

1940—1st, R I; 2nd, S E; 3rd, Phil
1941—1st, N Y; 2nd, Phil; 3rd, S E
1942—1st, N Y; 2nd, N N E; 3rd, Phil
1943—1st, Phil; 2nd, N N E; 3rd, N Y
1944—1st, R I ; 2nd, N N E; 3rd, N Y
1945—1st, R I; 2nd, N N E; 3rd, N Y
1946—1st, N Y; 2nd, Phil; 3rd, R I
1947—1st, N N E; 2nd, Phil; 3rd, N Y
1948—1st, Pied; 2nd, N N E; 3rd, Phil
1949—1st, R I; 2nd, N N E; 3rd, Pied
1950—1st, Pied; 2nd, R I; 3rd, Phil
1951—1st, N Y; 2nd, R I; 3rd, Phil
1952—1st, R I; 2nd, Phil; 3rd, N Y
1953—1st, R I; 2nd, N Y; 3rd, Phil
1954—1st, Wash; 2nd, Pied; 3rd, R I

A glance at the above shows that the Rhode Island Section, in addition to leading in points, also leads in the number of first place awards having won 6 times. Following in order are the New York Section with 4 first places; Piedmont with 2; and Philadelphia, Northern New England, and Washington with 1 each. The Northern New England Section leads with 6 second place awards followed by Philadelphia with 4, Rhode Island with 2, and Southeastern, New York and Piedmont with 1 each. In third place awards the Philadelphia Section leads with 6, followed by New York with 5, Rhode Island with 2, and Piedmont and Southeastern with one each. The details of this year's contest follow:

NATIONAL COMMITTEE

EARLE D McLEOD, *Chairman*
Arnold, Hoffman & Co, Inc

JACKSON A WOODRUFF, *Secretary*
American Viscose Corp

JOHN M GOULD
Barre Wool Combing Co, Ltd

KENNETH A HOWRY
Daily News Record

THOMAS R SMITH
Wiscassett Mills Co

JACKSON A WOODRUFF
(American Viscose Corp)
Secretary, National
Intersectional Contest Committee

JOHN M GOULD
(Barre Wool Combing Co, Ltd)
Member, National Intersectional Contest Committee

KENNETH A HOWRY
(Daily News Record)
Member, National Intersectional Contest Committee

JUDGES

Chief Justice

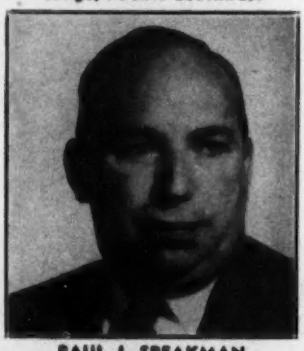
W F LUTHER
Dixie Mercerizing Co

W F LUTHER
(Dixie Mercerizing Co)
Chief Justice
Judge, South Central

ALBERT HERRMANN, JR
(General Aniline & Film Corp)
Judge, Hudson-Mohawk

JOHN A KOMNINOS
(Waldrich Co)
Judge, New York

RUSSELL B COLEMAN
(National Dyeing & Finishing Co)
Judge, Pacific Southwest



PAUL L SPEAKMAN
(E I du Pont de Nemours & Co, Inc)
Judge, Philadelphia

Hudson-Mohawk Section

ALBERT HERRMANN, JR, *Judge*
General Aniline & Film Corp

CHARLES R BARNES, JR,
Alternate Judge
F C Huyck & Sons

New York Section

JOHN A KOMNINOS, *Judge*
Waldrich Co

WILLIAM D BAIRD, *Alternate Judge*
American Aniline Products, Inc

Pacific Southwest Section

RUSSELL B COLEMAN, *Judge*
National Dyeing & Finishing Co

ARCH J MEASE, *Alternate Judge*
E I du Pont de Nemours & Co, Inc

Philadelphia Section

PAUL L SPEAKMAN, *Judge*
E I du Pont de Nemours & Co, Inc

R J THOMAS, *Alternate Judge*
E I du Pont de Nemours & Co, Inc

Piedmont Section

LINTON C REYNOLDS, *Judge*
Riegel Textile Corp

KENNETH S CAMPBELL
North Carolina State College

LINTON C REYNOLDS
(Riegel Textile Corp)
Judge, Piedmont

HERBERT S TRAVIS
(Rohm & Haas Co)
Judge, Rhode Island

LOUIS MIZELL
(Harris Research Labs)
Judge, Washington

THOMAS J GILLICK
(American Felt Co)
Judge, Western New England

Rhode Island Section

HERBERT S TRAVIS, *Judge*
Rohm & Haas Co

EDWARD J ALLARD, *Alternate Judge*
National Aniline Div

South Central Section

W F LUTHER, *Judge*
Dixie Mercerizing Co

Southeastern Section

HAZEL T STEVENS, *Judge*
Florida State Univ

HELEN L RICHEY, *Alternate Judge*
Florida State Univ

Washington Section

LOUIS R MIZELL, *Judge*
Harris Research Labs

ROBERT E STEVENSON, *Alternate Judge*
U S Dept of Agriculture

Western New England Section

THOMAS J GILLICK, *Judge*
American Felt Co

JOHN B DICK, *Alternate Judge*
The Pond Lily Co

SECTIONAL COMMITTEES

RALPH B SMITH
(New Jersey Laundry & Cleaning Institute)
Chairman and Speaker, New York

F J DE MARIA
(Para-Chem, Inc)
Chairman & Speaker, Philadelphia

RICHARD B STEHLE
(Allegheny Dye Works)
Alternate Speaker, Philadelphia

NEW YORK

RALPH B SMITH, *Chairman and Speaker*
New Jersey Laundry & Cleaning Institute

WALTER R BRANDT, *Secretary*
Antara Chemicals

MATTHEW J BABEY
American Cyanamid Co

S W BRAINARD
E I du Pont de Nemours & Co, Inc

RAYMOND DIAZ
Colgate-Palmolive Co

P FLORIO
Alexander Smith, Inc

ROBERT GAINES
Carbide & Carbon Chemicals Co

NORMAN GOBIEL
J P Stevens & Co, Inc

CLYDE F HAYWARD
Lever Bros Co

CARL W HAEFELE
Lever Bros Co

RAYMOND E KOURTZ
American Cyanamid Co

ALBERT HOYLE
United Merchants Lab, Inc

JOSEPH A WOODHEAD
Colgate-Palmolive Co

PHILADELPHIA

F J DE MARIA, *Chairman and Speaker*
Para-Chem, Inc

RICHARD B STEHLE, *Alternate Speaker*
Allegheny Dye Works

THOMAS H HART, *Secretary*
Hart Products Corp

FREDERICK W ALLENDORF
Geigy Chemical Corp

CARLETON T ANDERSON
Ciba Co, Inc

JACKSON M BAUER
Fred Whitaker Co

JOSEPH J BENISCHECK
Fred Whitaker Co

FRANK J BRITZ
National Aniline Div

ALFRED W COWAN
Ankokas Dyeing & Processing Co

ARTHUR W ETCHELLS
Hellwig Dyeing Corp

ALFRED F FELGENDREGER
Continental Mills, Inc

WILLIAM L FICKERT
General Dyestuff Co

ROBERT F GRAUPNER
Scholler Bros, Inc

SAMUEL H LOPER, JR
E I du Pont de Nemours & Co, Inc

HARRY L MORGAN
James Lees & Sons Co

EDWARD A MURRAY
(Consultant)
Chairman, Piedmont

GEORGE H RHODES
The Dow Chemical Co

HENRY E ROLLINS, JR
Sandoz Chemical Works, Inc

CLARENCE A SEIBERT
Scholler Bros, Inc

MURRAY E SPRING
American Cyanamid Co

ROBERT K STANLEY
Poplar Textiles, Inc

PERCIVAL THEEL
Philadelphia Textile Institute

ROBERT J THOMAS
E I du Pont de Nemours & Co, Inc

FREDERICK V TRAUT
Globe Dye Works Co

M H KLEIN
Sandoz Chemical Works, Inc

WILLIAM Z LEAPHART
C H Masland & Sons Co

ROBERT E WOLFRAM
Rohm & Haas Co

WILLIAM R WOLFGANG
Philadelphia Textile Institute

WILLIAM WYGAND, JR
E I du Pont de Nemours & Co, Inc

PIEDMONT

EDWARD A MURRAY, *Chairman*
Consultant

R HOBART SOUTHER, *Speaker*
Cone Mills Corp

LUTHER B ARNOLD, JR
Vikon Chemical Co

FRANCIS K BURR
Fabric Research Labs

KENNETH S CAMPBELL
North Carolina State College

SAMUEL L HAYES
Ciba Co, Inc

HARLEY Y JENNINGS
Dan River Mills

JOSEPH C KING
Fairforest Co

R HOBART SOUTHER
(Cone Mills Corp)
Speaker, Piedmont

WILLIAM J JUTRAS, JR
(Gag'iardi Research Corp)
Co-chairman, Rhode Island

W GEORGE PARKS
(Univ of Rhode Island)
Speaker, Rhode Island

ALBERIC T DI MASI
(Products Development Lab)
Chairman, Rhode Island

T J NUCKOLLS
Ciba Co, Inc

PAUL B STAM
Dan River Mills

RUSSELL G LAWRENCE
Rohm & Haas Co

JOSEPH LINDSAY, JR
Clemson College

LINTON C REYNOLDS
Riegel Textile Corp

HENRY A RUTHERFORD
North Carolina State College

RAPHAEL RUPP
Southern Dyestuff Corp

NEAL A TRUSLOW
U S Rubber Co

VINCENT B WRIGHT
North Carolina Finishing Co

RHODE ISLAND

ALBERIC T DI MASI, *Chairman*
Products Development Lab

WILLIAM J JUTRAS, JR, *Co-chairman*
Gagliardi Research Corp

W GEORGE PARKS, *Speaker*
Univ of Rhode Island

C ERIC NEALE, *Secretary*
The Apponaug Co

ROBERT H PHILLIPS
Cranston Print Works Co

ALDEN D NUTE
American Cyanamid Co

JOHN J ROARKE
Bradford Dyeing Assoc

THORWALD LARSON
Carbic Color & Chemical Co

STEPHEN H W NYE
Warwick Chemical Div
Sun Chemical Corp

FRANCIS L TOHER
National Aniline Div

RICHARD LEWIS
Stein, Hall & Co, Inc

GEORGE HERMANN
Eastern Color & Chemical Co

WILLIAM J COONEY
Chas S Tanner Co

JAMES J DILLON
King Phillip Finishing Co

WILLIAM H CADY
CHARLES A ROBINSON
Arnold, Hoffman & Co, Inc

BORIS FRANKFORT
Glenlyon Print Works Div

CARLETON C ADAMS
Fruit of the Loom Inc

EDWARD C COLLINS
General Dyestuff Co

FRANCIS CASEY
Sandoz Chemical Works, Inc

THEODORE CLARKE
E I du Pont de Nemours & Co, Inc

KENNETH DORMAN
Franklin Process Co

ALFRED MARZOCCHI
Owens-Corning Fiberglas Corp

ABSTRACTS OF INTERSECTIONAL CONTEST PAPERS

IMPROVEMENT OF CROCK FASTNESS IN NAPHTHOL-DYED FABRICS

PIEDMONT SECTION

EXTENSIVE studies have been made by several laboratories to determine the effect of numerous dyeing variables on the crock fastness of various naphthol-salt or base combinations.

The variables studied in this interlaboratory test include: effect of pH of coupling bath on crocking, effect of temperature and standing time of coupling bath, effect of variations in rinsing with and without steaming the naphthol before coupling, effect of soaping methods with variations in temperature and detergents, effect of alcohol addition to coupling bath on mercerized and unmercerized goods, effect of various dyeing combinations, and effect of various finishes applied to naphthol goods on crocking.

All variables studied affected the crock fastness or depth of shade of naphthol-dyed goods to some extent. Varying pH of the coupling bath had very little effect on crock fastness, but affected depth of shade considerably. Conclusions will point to proper selection of dye combination, detergent, and finishing compound, with close control of various phases of processing, particularly soaping, as best means of producing heavy naphthol-dyed shades with improved crock fastness.

A STUDY OF THE SOILING OF NATURAL AND MANUFACTURED FIBERS FROM AQUEOUS SYSTEMS

NEW YORK SECTION

FIFTEEN natural- and manufactured-fiber fabrics were soiled using two representative soils, which were applied by padding, spraying and immersion. These soiled fabrics were washed by four different standard methods using the Terg-O-Tometer and Launder-Ometer. The results were evaluated by reflectance measurements.

In most cases, soil applied by the spraying technique showed the heaviest soiling and was the most difficult to remove by the washing procedures. Padding gave the lowest amount of adherent soil and this soil was the most easily removed. Application by the immersion method gave slightly heavier and slightly more retentive soil than by padding.

The type of fiber and the physical condition of the fiber both influenced the amount of soil retained by the fabric through any soiling treatment, and also, the tendency of the soil to adhere to the fabric during washing.

The experimental results indicate that soiling and washing under standard conditions can be used to forecast the soiling characteristics of the fabrics under normal end-use conditions.

DYEING OF WOOL WITH DIRECT DYES

PHILADELPHIA SECTION

THIS paper will encompass a comprehensive evaluation of direct dyestuffs that are presently available on the American market with respect to their ability to dye wool.

The study covers the light- and wash-fastness properties of these dyes on wool. Light-fastness tests disclosed a range of direct dyestuffs that required 100 hours to give an appreciable break in the Fade-Ometer. Wash fastness with fibers other than wool was tested and methods for improvement investigated.

A detailed examination using certain selected dyestuffs was undertaken. The variables included exhaustion, rates of dyeing, pH, electrolytes and auxiliaries.

Comparison with acid milling dyes for both fastness and economics was made.

THE EFFECT OF MERCERIZATION ON THE CREASE-RESISTANT PROPERTIES OF COTTON FABRIC

RHODE ISLAND SECTION

IN preparing cotton fabrics for crease-resistant finishing, it is common practice to include a mercerization treatment prior to resin impregnation. To what extent this premercerization treatment actually affects the results apparently has not been thoroughly investigated, judging by the paucity of information on the subject in the published literature.

The object of this project was to study the effect of varying degrees of mercerization on the crush resistance and other related properties of a typical cotton fabric (80 x 80) when resinated. The cloth was bleached by two different methods: continuous-peroxide, and kier-boil followed by chemic. Portions of both bleaches were mercerized with six different strengths of caustic soda and also soluble-mercerized with two strengths. Two different crease-resisting finishes were applied: a urea-formaldehyde paste resin, and a methylated melamine syrup resin. All of the processing operations were carried out on a plant scale.

Specimens taken from the fabric at various stages of processing were tested against the unresinated goods for crease resistance, abrasion resistance, tensile and tear strength. The degree of mercerization of the various specimens was also determined by the Barium method, fluidity tests, dyeing tests, and spectrophotometric charts.

The results of the various trials will be classified and summarized.

Olney Medal to be Awarded to

MILES AUGUSTINUS DAHLEN

MILES AUGUSTINUS DAHLEN will be awarded this year's Olney Medal at the special award luncheon to be held at Chalfonte-Haddon Hall on Thursday, September 22nd, during the National Convention in Atlantic City. Dr Dahlen is the twelfth person to win the award, others being:

Louis A Olney — 1944	Charles A Seibert — 1949
Milton Harris — 1945	George L Royer — 1950
William H Cady — 1946	Raymond W Jacoby — 1951
Edward R Schwarz — 1947	Werner von Bergen — 1952
Harold M Chase — 1948	Roland E Derby — 1953
William D Appel — 1954	

The Olney Medal was endowed by the Howes Publishing Company, Inc and is awarded by the AATCC annually, or at such longer intervals as the Committee of Award may elect, to a citizen of the United States, for outstanding achievement in the field of textile chemistry, including the development of chemical agents or chemical processes used in the manufacture of textiles, or methods for their evaluation. Its purposes are to encourage and to afford public recognition of such achievements and contributions, and to be a testimonial to Louis A Olney in recognition of his lifetime of devotion and multitudinous contributions to this field.

The election of a candidate to receive the Award under the rules agreed upon by the Association and the Howes Publishing Company is by unanimous vote of the Olney Medal Committee of five, constituted as follows: (1) the President of the Association; (2) a member of the faculty of an educational institution awarding degrees in chemistry; (3) an employee of a concern manufacturing chemical products used in textile wet processing; (4) an employee of a concern manufacturing textiles; (5) a member at large who may be any qualified individual. All must be senior members of the Association.

The present members of the committee and their terms of office from January, 1955 are: (1) Raymond W Jacoby; (2) Percival Theel, 3 years; (3) Paul L Meunier, 4 years; (4) Harley Y Jennings, 1 year; (5) Walter M Scott, 2 years. The secretary of the Association is secretary of the Committee without vote. As the term of each elected member expires, the Committee itself elects a successor to serve for four years.

* * * *

Miles A Dahlen, advisor on dyes, intermediates and related chemicals in the Technical Division of the Organic Chemicals Department, E I du Pont de Nemours & Co, Inc, Wilmington, Del, began his career with the company in 1928, after receiving his doctorate from the University of Minnesota, where he was a Du Pont fellow. He first worked as a research chemist at the Jackson Laboratory at Deepwater Point, N J, was made a section head in 1930, a division head in 1932, and in 1938 was transferred to the Organic Chemical Department's Technical Laboratory, also at Deepwater Point, as assistant laboratory director.

On August 1, 1946, he was appointed assistant director of domestic sales of the Dyestuffs Division, and in February of 1949 became director of sales of the Fine Chemicals Division. Dr Dahlen was made director of sales for the Dyestuffs Division on December 1, 1951. In May, 1952, when the Fine Chemicals Division and the Dyestuffs Division were combined to form the Dyes and Chemicals Division, he was named director of sales for this new division.

He was transferred to the Technical Division as adviser for dyes, intermediates and related chemicals, in January, 1955.

Dr Dahlen was born January 4, 1904, at St Paul, Minn. He received a bachelor of science degree in chemical engineering from the University of Minnesota in 1924, and a doctor of philosophy in organic chemistry from the same institution in 1928.

In June, 1928, he married Marion C L Boyne, of Stillwater,

(Above): The Olney Medal

(Right): The medalist, his wife, and two of his sons.

Minn, and they have three sons: Miles Boyne, Dean Magnus and Rolf John. Dr and Mrs Dahlen live at 309 Milton Drive, Wilmington, Del.

Dr Dahlen has written numerous articles for technical journals, and a number of patents have been granted on his inventions in the chemical field. He was a consultant to the US Army, and a member of a technical intelligence mission to the Europeon Theatre of Operations from July to November of 1945.

Dr Dahlen has also served as director of the Textile Research Institute, Inc, and chairman of the Delaware Section of the American Chemical Society. He is a member of the Executive Committee on Research of the AATCC, and a director of the Wilmington Sales Executive Club.

* * * *

Dr Dahlen's exuberant personality instills an attitude of confidence and trust in those with whom he comes in contact. He is an interested listener and after a problem is broached he can generally come back with either a better way of doing a job or a better way of expressing an idea. Whatever criticisms he may have to offer are always constructive. He has a facile, alert and understanding mind and despite his intimate knowledge of many subjects he is always willing to accept another man's opinion, which he adds to his store of knowledge. Whether meeting Miles A Dahlen on a social plane or in business, one finds his demeanor is exactly the same. Those who have worked with him and for him can express themselves in only highest terms of the way he handles people — how he gives them opportunities to expand and give expression to their thoughts.

He is enthusiastic about everything he does — work or play — and he is a strong advocate for promoting a desire in the "good-grade high school student" to follow a career in the field of chemistry and chemical engineering. He can talk at length about the opportunities awaiting the youth who selects such a vocation.

Dr Dahlen is a very good bridge player, likes boating, is interested in art, having recently taken up painting with oils as a medium, formerly played business men's golf, his pleasure over the game exceeding his scoring ability, likes outdoor cooking and is a great Minnesota promoter.

Exhibit Descriptions———

(Concluded from Page P598)

UNITED STATES TESTING CO, INC

1415 Park Avenue
Hoboken, N J
Booths 75 and 76

This exhibit will feature testing and research services. Testing instruments will be on display and will include the Carson-Worthington Stiffness Tester and the Terg-O-tometer for evaluating detergents, together with samples of standardized soiled cotton, acetate and wool test cloth.

In attendance — Frank P Brennan, assistant sales manager; Robert J Keltz, technical sales, Philadelphia Branch.

VERSENES, INC

875 Waverly St
Framingham, Mass
Booths 27 and 28

VIRGINIA SMELTING CO

West Norfolk, Virginia
Booths 25 and 26

In addition to a display of textile chemicals, Joseph Kaliff, nationally famous caricaturist will be present to entertain visitors.

In attendance — A K Scribner, Sr, vice president and general manager; J A Weatherford, sales manager, industrial department; Dr M A Kise, director of research and development; H S Atwood, supervisor, application research; T T Allan, New England representative; H B Channon, manager, technical service department; J R Eldridge and E H Keys, New York representatives; J B Johnson, Southeastern representative; H B Peterson, Southwestern representative; R E Thompson, West Norfolk office; R H Israel, advertising manager.

WALLERSTEIN CO, INC

180 Madison Avenue
New York 16, N Y
Booth 43

This will be a reception booth displaying Rapidase and Serizyme — desizing enzymes.

In attendance — J Andrew Clark, sales manager, textile division; Frank A Taberski, James J Casserly and John C Robertson, representatives.

WALTON LABORATORIES INC

1186 Grove St
Irvington 11, N J
Booth 67

Humidifying equipment will be on display.

In attendance — Jack Feldermann, vice president; J R Lewis, sales manager, Industrial Div; H Puttbach, sales representative.

EDWIN L WIEGAND CO

7500 Thomas Blvd
Pittsburgh 8, Pa
Booth 22-22A

This exhibit will show representative examples of radiant heating in the textile industry for resin curing, heat-setting of synthetics and combinations, prevention of migration, and preheating before hot flue drying.

In attendance — J V Calhoun, C B Rogers, Russell Ranson, Grier Wallace, Dean Stapp, R L Faber, Frank Perotta and W L Thomson.

JACQUES WOLF & CO

Passaic, N J
Booth 33

Chemical specialties for wet processing natural and synthetic fibers will be shown. New items to be featured include: Supergum H — a modified vegetable gum carefully prepared in the form of a cold water-soluble powder; the solution has a long-fibered characteristic that does not stick in the engraving or become short-bodied on extensive runs; it is said to be ideal for bright shades, sharp outlines, penetration and color yield. Lupomin N Y — a nonyellowing softener and finishing agent with antistatic properties. Superclear #100 N — a new product for application in dyeing to prevent migration of colors.

In attendance — S E Tylee, president; G J Desmond, vice president, treasurer and general manager; Arnold Pfister, secretary and production manager; Walter Deuble, assistant sales manager; M F Costello, E J Grady, Walter Reid, G W Searell and C E Wright, sales representatives.

Abstracts of Technical Papers

GENERAL TECHNICAL SESSION

SEPTEMBER 22nd, VIKING ROOM, 2-5 PM

Presiding: Arthur W Etchells

The Use of Radioactive Tracers to Study the Interaction of Cellulose with Simple Salt Solutions and with Dyebaths

HOWARD J WHITE, JR and MARY MONCRIEFF-YEATES
Textile Research Institute, Princeton, N J

A radioactive-tracer technique, previously developed for the study of absorption by hair, has been adapted to the measurement of the absorption of salts by cellulose fibers. The experimental method, which involves the use of single-fiber samples, will be described briefly and its advantages discussed.

The salts used were sodium sulfate and sodium bromide. In some cases both the absorption of the cation and of the anion were measured independently. The effects of changes in temperature and concentration of salt in the treating solution were also considered.

Finally some measurements were made on the uptake of salt from a direct dyebath. These results will be discussed in terms of the current theories on the absorption of direct dyes by cellulose.

Howard J White, Jr

Howard J White, Jr, associate director of research at Textile Research Institute, holds the following degrees: AB, Princeton Univ (1942); MS, Univ of Wisconsin (1944); and Ph D in physical chemistry, Princeton Univ (1947).

His major fields of interest include absorption by fibers, and application of thermodynamics and statistical mechanics to fibrous materials.

Mary W Moncrieff-Yeates

Mary W Moncrieff-Yeates, junior scientist at Textile Research Institute, was granted a B Sc degree from London University in 1948 with 1st class honors. Following her graduation she was engaged in pyrethrum research at London Univ during 1949, and antibiotics research during 1951-2. She has been with TRI since 1953.

Her major fields of interest are physical methods of analysis, and absorption by fibers.

Catalysis in Blended Chemical Finishes

D DONALD GAGLIARDI
Gagliardi Research Corp, East Greenwich, R I

With the increasing trend to apply to textile fabrics a variety of chemical products in one finishing bath, the problem arises of properly curing or fixing all of the products in or on the textile fibers by use of the least number of catalysts. In some applications of blended thermosetting resins to cellulosic fabrics, a single acid-yielding catalyst will properly cure all the resins on heating. With combinations of formaldehyde, nitrogen resins, ketone resins, hydroxylated polymers and cationic softeners with durable silicone- or resin-type water repellents it becomes necessary to use selected specific catalysts. In some cases, the specific catalyst for one of the chemical finishing agents may be antagonistic to the proper cure of a second finishing agent in the finishing mix. This is illustrated in the attempts to use an alkaline-catalyzed ketone resin with an acid-catalyzed urea- or melamine resin at the same time.

A greater problem arises in blends of chemically different finishing agents in that an ideal catalyst for one product may have very deleterious effects on fiber properties, dyestuffs, handle, etc, or may bring about odor, toxicity, or discoloration problems. A discussion will be presented on the theory and mechanism of catalysis of various chemicals used by the textile-finishing industry with special emphasis on the practical problems facing the textile finisher if he is not warned of the specific nature of the products or the catalysts that are recommended for his use.

D Donald Gagliardi

D Donald Gagliardi received his BS in chemistry from Yale University in 1942, and later attended Dept of Commerce and George Washington University graduate schools. From 1942-4 he served as a research associate at the Textile Foundation Laboratories. During 1944-5 he served with the Army of the United States at the Biological Warfare Labs, Protective Finishes Branch, Camp Detrick, Md. Following this he joined Rohm & Haas Co's Textile Chemical Lab and Physico-chemical Lab as a research group leader until 1951 when he was named research director for Warwick Chemical Co, Div of Sun Chemical Corp. Mr Gagliardi founded the Gagliardi Research Corp last year.

A member of AATCC, ACS, AAAS and ASTM, Mr Gagliardi is the author of 14 published scientific papers on textiles and textile chemistry. He also holds several patents and has filed additional applications on catalysts, water repellents, and resins.

Present Status of Theory of Dyeing

EMERY I VALKO
Onyx Oil & Chemical Co, Jersey City, N J

There is a definite advantage in viewing all those textile dyeing processes which are based on penetration of the dye (or of the dye-formers) into the fiber as variations of one and the same basic phenomenon and regulated by the same general relationships. Diffusivity, molecular attraction, Coulombic forces, accessibility and number of adsorptive sites vary from fiber to fiber, and thus modify the operation of these general relationships. The main progress in recent years has been an increasing awareness of this common theoretical foundation of the mechanisms of dyeing.

The carrier dyeing of synthetic fibers can be explained within the frame work of the general theory of dyeing. Swelling of fibers by mixed solvents is the most generalized concept of dyeing when the dye itself is considered one of the swelling agents.

The emergence of the new type of neutral-dyeing chrome-complex dyes for wool requires a study as to how this method fits into the previously established concept of dyeing with chrome-complex dyes.

The increased economic significance of dyeing and printing with nonpenetrating pigment colors calls for more scientific information on these processes. The physical and chemical

properties of the film formed by the pigment-binding resins have to be studied to supply the required information.

Emery I Valko

Emery I Valko received his Ph D in chemistry from the University of Vienna, where he did research work and taught as a research associate. From 1929 to 1938 he was research chemist at the Central Research Laboratory of I G Farben (now Badische), Ludwigshafen, Germany. Dr Valko served Onyx Oil & Chemical Co as a research chemist from 1939-1946; left to become director of research of E F Drew & Co, Inc, Boonton, N J in 1946; became an independent research consultant and project leader at the Polytechnic Institute of Brooklyn in 1949; and rejoined Onyx as research director in 1954. He was elected a vice president in 1955. Since 1952 Dr Valko has been serving as a collaborator, Cotton Fiber Section, Southern Utilization Research Branch, Agricultural Research Service, U S Dept of Agriculture.

He is author or co-author of more than 40 technical papers, and more than 20 patents have been granted him. His book, "Colloidal Chemical Principles of Textile Patents", was published in Germany in 1937.

Dr Valko is a fellow of the Textile Institute (British), the Society of Dyers and Colourists, and the New York Academy of Sciences. He has served on several AATCC committees.

SYMPOSIUM: BRINGING SYNTHETICS UP TO DATE

SEPTEMBER 23rd, VIKING ROOM, 9AM-12 NOON

Presiding: Edwin J Grajeck

Advances in the Dyeing & Finishing of Man-Made Fibers

PAUL L MEUNIER
Technical Laboratory, E I du Pont de Nemours & Co, Inc, Wilmington, Del

The remarkable progress of man-made fibers is attributed in part to steady advances in the technology of dyeing and finishing.

New cationic dyes for Orlon acrylic fiber and improved processes for dyeing, leveling, and stripping through the use of retarding agents and the dyeing of Orlon tow have materially improved the position of this fiber. Acrilan acrylic fiber is also dyed with disperse, cationic or acid dyes in knitwear, rawstock, yarns and piece goods.

A new process of applying developed navy and black dyes on Dacron polyester fiber has reduced dyeing costs on yarns and rawstock. Problems of dyeing with carriers at the boil with disperse colors, in relation to high-temperature dyeing under pressure will be discussed.

Recently methods for dyeing nylon fabrics with a minimum degree of warp streakiness and barré have been developed, using anionic surface-active agents which compete for dyeing sites.

A new line of disperse dyes capable of fixation to washing on acetate by an aftertreatment has been announced. Arnel triacetate fiber is dyeable with selected disperse dyes rendered fast to washing by heat-setting after dyeing.

The importance of finishing agents, such as softening materials, antistatic and water-repellent finishes, will be discussed.

Paul L Meunier

Paul L Meunier, assistant director of the Technical Laboratory, in charge of research and development, joined the Du Pont Company in 1936, immediately after receiving his Ph D in chemistry at Pennsylvania State University.

He first became a research chemist in the synthesis of dyes at Jackson Laboratory; then, two years later, he became engaged in dye application research at the Technical Laboratory. In June, 1950, he was given charge of sales development of new products in the Dye Division of the Organic Chemicals Department, especially dyes for hydrophobic fibers. In 1954 he returned to the Technical Laboratory to resume work in the field of dye application.

The Sandocryl Process for the Dyeing of Polyacrylonitrile Fibers

CHARLES W SAALFRANK
Sandoz Chemical Works, Inc, New York, N Y

Much is known currently about the dyeing of polyacrylonitrile fibers by the cuprous-ion method. The Sandocryl method is a refinement of this process where metallic copper is used as the reducing agent in the bath.

This paper will include the advantages of the Sandocryl method over the old method, the type and amount of copper to be used, and the conditions of the dyebath to obtain the best results.

Charles W Saalfrank

Charles W Saalfrank, a graduate of Lowell Technological Institute, did graduate work at Univ of Minnesota. Prior to joining Sandoz, he was with Pacific Mills, Lawrence, Mass, in the Physical Testing and Dyeing Laboratory.

Mr Saalfrank has been with Sandoz for the past 14 years, 7 of which were spent in the Boston office and the last 7 in the New York office, where he holds the position of chief chemist of the New York Application Laboratory.

The Finishers' Viewpoint

JOHN A KOMNINOS
Waldrich Co, Delawanna, N J

Abbreviated observation of the frenetic production scene in the dyeing and finishing industry invites speculation, gives birth to many far-fetched theories, and gives a general impression of disorder. On closer and continued examination many of the seemingly insurmountable problems are solved locally on specific fabric constructions and some are solved to such a degree that the answers serve as guides for many types of fabrics. This discourse will deal with newer-synthetic-fabric processing problems as experienced in the finishing plant with some insight to their apparent answers.

The sequence of preparatory treatments of the newer synthetics destined for conventional or pressure dyeing are defined in order to demonstrate the different avenues of approach to the two types of dyeing.

The effect of high temperature upon dyed fabric blends of

Arnel-viscose, Dynel-viscose, and Orlon-nylon will be noted, a practical method of fabric temperature measurement will be discussed, and the correlation of a woven-goods finishing problem to a sweater dyeing problem will be revealed.

The unsolved problems of additive finishing the newer synthetics will be introduced with the question, "Should the miracle polymers be dependent upon their additive satellites for success?"

John A Komninos

John A Komninos, lab director and manager of chemical manufacturing at Waldrich Co, studied at College of the City of New York, and Newark College of Engineering, receiving the degrees of Ch E and B Sc.

Upon his return from Europe at the conclusion of World War II, he was engaged by Modern Plastics Associates as acrylic technologist until 1947, at which time he joined his present firm as technician.

Mr Komninos is treasurer of the New York Section, AATCC.

The Dyeing and Heat Treatment of Arnel Triacetate

FRED FORTESS
Summit Research Labs, Celanese Corp of America, Summit, N J

Arnel cellulose triacetate may be classified as a new hydrophobic fiber resistant to swelling, and intermediate in dyeing properties between regular acetate and Dacron. During the last year, a wide variety of fabrics has been adapted to existing dyeing facilities with the achievement of a full range of shades having a high level of wash-, gas-, and light-fastness properties. Special problems in the dyeing of Arnel blends with cotton, rayon, nylon, wool and Dacron will be discussed and the level of achievement illustrated. The basis for the selection of disperse (acetate) dyes and the effective use of dyeing accelerants will be discussed in some detail.

The heat treatment of Arnel-containing fabrics is an essential requirement for the attainment of improved colorfastness as well as for the modification of the thermal properties of the Arnel component with respect to glazing resistance, dimensional stability, and ironing properties. Existing heat-treatment processes and their specific attributes and limitations will be discussed.

Fred Fortess

Fred Fortess is the section head of dyeing and finishing research for Celanese Corp of America at its Research Laboratories at Summit, N J. This group has been responsible for the research and development of dyeing and finishing processes for Arnel, the newest Celanese textile fiber.

Mr Fortess is the author of several papers concerned with textile finishes with particular emphasis on the textile application of the silicone resins. Previously, Mr Fortess was responsible for textile lubrication and sizing research.

Before joining Celanese, Mr Fortess was research chemist with Universal Oil Products Co in the field of catalytic reactions. He received his BS degree from the University of Chicago, where he also did graduate work.

High-Temperature Dyeing

RAY J ANDRES
Textile Fibers Dept, E I du Pont de Nemours & Co, Inc

The many advantages to be attained from dyeing fibers at temperatures above 212°F have led to widespread use of pressurized equipment for dyeing rawstock, tow, top, yarn and fabric.

Following a review of the chemistry of high-temperature dyeing, newer developments in machines and processing techniques will be discussed. Mill conditions most suitable for several fibers will be described. Results of a large number of dyeings of various fabric styles on several machines for fabrics will be offered as a guide for dyers interested in using high-temperature methods.

Ray J Andres

Ray J Andres received his BS in chemistry from the College of St Thomas in 1940, and his Ph D in organic chemistry from the Univ of Nebraska in 1944.

He began his career with Du Pont as a research chemist in the Orchem and Textile Fibers Departments in 1944, became a group leader in the latter Department in 1947, concerned with dyeing studies and polymer synthesis, and advanced to supervisor of polymer synthesis in 1950. Dr Andres is presently concerned with development of dyeing and finishing methods, new equipment for dyeing, and technical service.

SYMPOSIUM: LAUNDERING, DRYCLEANING & GARMENT DYEING

SEPTEMBER 23rd, WEST ROOM, 9AM-12 NOON

Presiding: William J Mooney

Launderable Textiles

GEORGE H JOHNSON
American Institute of Laundering, Joliet, Ill

The importance of good laundering qualities in modern-day washable textiles is perfectly obvious to all segments of the textile industry. Washables, almost regardless of their fiber content, can be made to launder perfectly or they can be so constructed that they fail in the first laundering, whether at home or in a professional laundry.

The important point to consider is the end use of a given textile. This is true not only of the old-line staple washable items made from cotton, linen, rayon, acetate and wool, but also of the newer fibers and blends containing nylon, Orlon, Dacron, Vicara, Dynel, Acrilan, and Creslan.

An excellent example of how a group of industries can work together to develop consumer-satisfactory washable standards is illustrated by the work that was completed late last spring.

As a result of cooperative effort, participated in by technical representatives of AATCC, the following trade associations have agreed to a labeling program for shirts that should prove helpful not only to the consumer, but also to the various industries represented by these associations: American Institute of Laundering, Associated Menswear Retailers of New York, National Association of Retail Clothiers and Furnishers, National Association of Shirt, Pajama and Sportwear Manufacturers, National Institute of Drycleaning, and National Retail Dry Goods Association.

Measuring the Whitening Effects of Fluorescent Dyes and Perborate Bleaches on Cotton

MARGARET S FURRY

Home Economics Research Branch, Agricultural Research Service
U S Dept of Agriculture, Washington, D C

A laboratory technique has been developed for measuring fluorescent and nonfluorescent whitening effects in fabrics. In a series of experiments, by means of two different reflectometers modified either to include or to exclude ultraviolet from the light source, measurements were made indicating the whiteness of undyed cotton test fabrics laundered repeatedly with different detergent solutions containing fluorescent dyes and perborate bleaches. Results showed that the whitening effects produced by the various washing treatments as evaluated by the two instruments were comparable and conformed well with visual observations.

Margaret S Furry

A native of Iowa and educated at Iowa State College, Margaret S Furry is a textile chemist in the Home Economics Research Branch, where she has conducted research on such fabric-care studies as the starches, sizes and mildew-resistant finishes for cottons, the materials and home methods for removing stains from fabrics, the soil-removing efficiency of soaps and synthetic detergents, and the effect of detergents and washing methods on fabric properties.

Garment Dyeing in the United States Today

ARTHUR C TEICHNER

Almore Dye House, Inc, Chicago, Ill

The subject matter of this paper consists mainly of a discussion of the present-day methods and problems encountered by the garment dyer in our country.

The prime object of the garment dyer has always been to renew or change the color of wearing apparel. Along with this, he has usually processed rugs and household goods, such as drapes and spreads.

The various dyeing methods used will be discussed, with special emphasis on union dyeing. The old problem of covering sun-faded woolens evenly is brought into focus and it will be pointed out just how much more successfully garment dyers are solving this headache today than they were able to do in past years. Mention also will be made of difficulties encountered because of the great amount of unserviceable material on the market.

Following the recent introduction of several new synthetic fibers, the garment dyer finds himself confronted not only with garments made entirely of acrylic or polyester fibers, but with many blends of older, established fibers and new ones. This has brought him face-to-face with a problem that he has had great difficulty in solving. The garment dyer usually has had to work out his own problems in the past, and always has done so successfully. This is the first time he has run into a real stumbling block. An up-to-date analysis of what he is doing in an effort to satisfactorily redye the above-mentioned articles will be presented. Included will be several illustrative formulas for redyeing to heavy shades on Orlon and Dacron.

Arthur C Teichner

Arthur C Teichner, who was graduated from Lowell Technological Institute in 1943 with a BTE degree, has been superintendent of Almore Dye House, Inc since 1946. He had previous experience with American Aniline Products, Inc, and E I. Mansure Co, as well as military service in the Army Signal Corps.

Since 1950 he has served as chairman of the Garment Dyers Guild of America's Research and Development Committee. He is a member of the Mid-West Section, AATCC.

Finishing and Color Problems in Drycleaning

JOHNE PARSLEY

Philadelphia Textile Institute, Philadelphia, Pa

The primary purpose of this paper is to point out some of the more pronounced problems the public is encountering with fabrics in their end use, and to suggest means by which they may be minimized or eliminated.

The consumer who supports the industry which makes and processes fabrics has many complaints about what he buys, wears, and uses. Many of these complaints are warranted because they involve negligence, carelessness, and poor judgment of one phase or another of the textile industry — either in the manufacturing and processing end, or in the servicing end.

Philadelphia Textile Institute, under a fellowship arrangement with the Pennsylvania Association of Dyers and Cleaners and another with the Pennsylvania Laundry Association, has undertaken the task of analyzing some of these problems and establishing their origin. In the solution of many of these problems, it is necessary to draw from the combined knowledge of textile men, weavers, dyers, drycleaners, launderers, and chemists.

Specific examples of certain problems — common and novel, will be shown and suggestions will be made as to how such problems can be avoided. The avoidance or minimizing of these problems will make for a more satisfied consumer, and a better quality of consumer goods.

JOHNE PARSLEY

Johne Parsley, a research fellow on drycleaning and laundry at PTI, has attended the following: Columbia College (premedical); New York Univ (BS, chemistry); Univ of Kentucky (research fellow); Detroit Institute of Technology (graduate study).

He has served on the following staffs: Standardization Lab, Metropolitan Life Insurance Co, 5 years Research Dept, Wyandotte Chemicals Corp, 6 years; Research Dept, PTI (chemical research), 3 years. He also has had experience as a private consultant.

SYMPOSIUM: DYEING AND FINISHING

SEPTEMBER 24th, VIKING ROOM, 9AM—12 NOON

Presiding: James L Fesperman, Jr

Wool Processing

JACKSON BAUER

Fred Whitaker Co, Philadelphia, Pa

(No abstract available)

Pressure Dyeing and Drying in a Closed System as Compared to Dyeing and Drying in an Open System

F THEIS

B. Theis Co, Toosfeldt, Germany

(No abstract available)

Soil-Resistant Treatment of Fabrics

JASON M SALSBURY, T F COOKE, ELLIOT S PIERCE and PHILIP B ROTH
American Cyanamid Co, Bound Brook, N J

The mechanism of dry soiling will be considered and the action of a soil-resistant finish proposed. A laboratory method for measuring the dry-soiling properties of fabric will be described. Methods will be given for applying soil-resistant materials in the laboratory and under commercial conditions. The results of laboratory tests will be compared with actual wear tests on carpets made of a number of different fibers.

A newly developed soil-resistant finish will be described. In small quantities it greatly reduces the soiling properties of fabric. The main advantages of this soil retardant over earlier types are a softer hand and little or no effect on the light fastness of dyes.

Jason M Salsbury

Jason M Salsbury received a BS degree from the University of Richmond in 1940 and Ph D in chemistry from the University of Virginia in 1945. In 1946 he came to American Cyanamid Co as a research chemist. He was promoted to chemist-in-charge of the Pre-Pilot Plant of Stamford Laboratories in 1948. From 1950 to 1953 he was associated with Cyanamid's fiber research program. In 1954 he became manager of the Textile Resin Research Section of American Cyanamid Co.

A Study of Rayon in Tufted Carpeting

L L WALMSLEY, W S SOLLENBERG and D P FEYLER
Textile Research Dept, American Viscose Corp, Marcus Hook, Pa

Data to be presented will be concerned with the dyeing and finishing of 100% rayon and rayon blended with nylon, acetate, and wool in tufted carpeting. Factors which the dyer must consider in piece dyeing and stock dyeing with direct or vat dyestuffs will be discussed along with test methods and end-use specifications. Some emphasis will be placed on the necessity for dyestuff selection as related to fastness requirements, level dyeing, and suitability to withstand carpet cleaning and spot-removal techniques. Causes of warp streaks in rayon carpeting will be given and methods of isolating some causes described.

Current interest in new dyeing and finishing equipment and methods will be reviewed. Included also will be data on the general use and value of soil-resist treatments and information concerning discoloration in finished carpeting.

L L Walmsley

L L Walmsley was educated in England at the Salford Royal Technical College where he majored in chemistry and dyeing. He has since been connected with firms in the dyeing and finishing of cotton, woolen and rayon fabrics and has been a member of the staff of the Textile Research Dept for the past twelve years.

W S Sollenberg

W S Sollenberg was graduated from Gettysburg College with a BS degree in chemistry. After service with the Armed Forces, he attended Pennsylvania State College before joining American Viscose Corp in 1947. He has since been engaged in dyeing and finishing research and customer service as a staff member of the Textile Research Department.

D P Feyler

D P Feyler received a Master of Science degree from Lowell Technological Institute in 1953. He joined American Viscose Corporation in that year and is now supervisor of the Dyeing and Finishing Division Laboratory at the Textile Research Department.

The Pad-Roll Dyeing System and Its Technical and Economical Application

BERTIL MELLBIN
AB Svenska Textilmaskinfabriken, Goteborg, Sweden

The Pad-Roll System is a new, high-production method for open-width dyeing with substantive dyestuffs, having been invented and developed in Sweden by C O Eriksson and N D Landquist, dyehouse manager and chief research chemist of the Rydboholm Co.

After a few years of practical experience, this machine has been further developed by the author and introduced into a number of leading European finishing mills. The first installation of the pad-roll machine is expected to be in operation in a prominent US mill shortly.

The Pad-Roll System is advantageous for other wet processing, such as desizing, chloride bleaching, caustic treatment, etc.

Bertil Mellbin

Bertil Mellbin, president and director of AB Svenska Textilmaskinfabriken, has had extensive experience as chief engineer of several leading Swedish dyeing and finishing firms. His firm is currently concerned with the designing and manufacturing of textile-finishing machinery.

SYMPOSIUM: CHEMICAL AGENTS IN TEXTILE PROCESSING

SEPTEMBER 24th, WEST ROOM, 9AM-12 NOON

Presiding: Hector C Borghetty

An Evaluation of Mothproofers in Terms of Present-Day Trade and Consumer Requirements

E WALLACE BIRDSALL
Geigy Dyestuffs, Division of Geigy Chemical Corp, New York, N Y

Changing economics and living conditions make mothproofing increasingly important. Past work by the AATCC provides a sound method for testing. Biological laboratory tests on durable mothproofing are confirmed by consumer experience. Mothproofing requirements, as defined by the National Better Business Bureau and others, are the basis for consideration of mothproofing methods. The utility and limitations of three general classes of mothproofing materials will be evaluated on this basis.

A film, "Insects Astray," will describe the useful purpose of the keratin-eating insects in the balance of nature and will show how they have become pests. A section of the film will show briefly in nontechnical manner the development of a durable mothproofer (Mitin), its use, and the biological methods needed to police the mothproofed goods.

E Wallace Birdsall

E Wallace Birdsall has served as manager of the Mitin Dept of Geigy Dyestuffs, division of Geigy Chemical Corp, since 1950. Prior to that, he was with Geigy in technical and sales capacities in the New England territory from 1938.

He is presently chairman of AATCC's Committee on Resistance to Insect Pests.

Relative Efficiency of Chelating Agents

M E CHIDDIX, A C SIGNORE and G M GANTZ
Antara Chemicals, a Div of General Aniline & Film Corp, New York, N Y

This paper will describe a number of experimental methods for determining the relative efficiency of chelating agents in specific textile processes. Control of calcium, copper, and iron by either quantitative or qualitative procedures will be discussed. Test conditions can be selected to correspond to many wet operations in scouring, bleaching and dyeing.

The data indicates, for example, that ethylenediaminetetraacetic acid (EDTA) is more effective in controlling copper in a peroxide-bleach bath than hydroxyethyl ethylenediaminetriacetic acid (EDTA-OH). On the other hand, EDTA-OH is more effective than EDTA in controlling iron in a soda-ash bath. A balanced chelating agent will be described, which is effective in a wide variety of textile-processing operations.

George M Gantz

George M Gantz was granted his AB from Oberlin College in 1937 and a Ph D from Univ of Rochester in 1941.

He has served as senior chemist, Naval Research Laboratory, 1940-46; research director, Lonsdale Co, 1946-51; and product engineer, General Aniline & Film Corp, 1951-54. Presently he is technical manager, textile chemicals, Antara Chemicals, a Division of GAF.

Dr Gantz' special interests include bleaching, dyeing, and finishing of cotton, rayon and synthetic fibers, as well as development of textile chemicals. He currently heads AATCC's Committee on Bleaching.

Continuous Bleaching of Cottons with Silicate-Free Peroxide Solutions

PAUL FELDMANN
Dan River Mills, Inc, Danville, Va
and
BERNARD K EASTON
Becco Chemical Div, Food Machinery & Chemical Corp, Buffalo, N Y

Sodium silicate has long been recognized as an outstanding stabilizer for alkaline hydrogen-peroxide solutions used in bleaching cottons. However, with the advent of continuous bleaching several drawbacks to sodium silicate developed; namely, its tendency to form scale which is deposited on the surface of equipment, and the difficulty in washing silicate from the cloth. These drawbacks created serious problems in many mills, particularly those handling sheer fabrics or bleaching cloth prior to dyeing.

The authors will show how phosphates can be used instead of silicates to formulate stabilized peroxide solutions which will not cause such difficulties. Practical application of these solutions for the continuous bleaching of cottons will be described as well as much of the experimental work which formed the basis of this development.

Paul Feldmann

Paul Feldmann, group leader in the Research Department of Dan River Mills, Inc, received his Ph D degree from the University of Munich. He did research work on photochemistry, x-ray methods and paramagnetism in Munich and at the University of Freiburg and Strassbourg. He has been with Dan River Mills for 12 years. He is presently in charge of the analytical laboratory handling chemical control and evaluation of products. He has done research work on chemical modification of fibers, water repellency, bleaching, and detergency.

Bernard K Easton

Bernard K Easton, manager of the Textile Research and Development Department of Becco Chemical Division, received his BS degree in chemistry at Lafayette College. His 13 years with American Viscose Corp were divided between production and the Standards Department. He was with General Dyestuff Co for 3 years as textile chemist in the New York laboratory. Since joining Becco in 1947, he has been actively engaged in work with continuous bleaching ranges for woven fabrics and knit goods, as well as supervising technical service in all phases of the textile industry using peroxygen compounds.

Mr Easton is presently an AATCC Councilor, representing the Niagara Frontier Section.

The Principles and Practice of Color Stripping

W C LINDSLY and N A MATLIN
Textile Applications, Lab, Rohm and Haas Co, Philadelphia, Pa

This paper will consider the hydrosulfite and sulfoxylate types of strippers.

The mechanism of stripping will be discussed briefly, followed by a discussion of the practical aspects.

The hydrophilic fibers offer no problem in stripping (provided the dye is dischargeable), while for the hydrophobic fibers it will be brought out that diffusion of the stripper into the fiber and corresponding diffusion of the reduction products out of the fiber are important.

Walter C Lindsly

Walter C Lindsly is in charge of textile sales service work in the Research Laboratories of Rohm & Haas. In this capacity he has worked on a large variety of problems including the stripping of most commercial types of fabrics and colors.

Nathaniel A Matlin

Nathaniel A Matlin, a graduate of Lowell Technological Institute, has done research and development work for Rohm & Haas on the use of reducing agents in stripping color from textiles.

NATIONAL CONVENTION COMMITTEE

GEORGE O LINBERG, *Chairman*
(Synthron, Inc)

RICHARD R FREY, *Secretary*
(AATCC)

One Year	*Two Years*	*Three Years*	*Four Years*
SAMUEL L HAYES (Ciba Co, Inc)	ERIC W CAMP (National Aniline Div)	FREDERICK V TRAUT (Globe Dye Works Co	ARTHUR I HULTBERG (Bear Brand Hosiery Co)
PATRICK J KENNEDY (E I du Pont de Nemours) & Co, Inc)	RAYMOND W JACOBY (Ciba Co, Inc)	C RUSSELL GILL (Southern Sizing Co)	ERNEST R KASWELL (Fabric Research Labs)

"In the final analysis, the indomitable will-to-do proves the inspirational salvation for those who have dreamed of constructive things" ———Theodore B Hayward, vice president, Philadelphia Textile Institute Foundation.

PTI IN RETROSPECT*

ALAN M RICHTER

Director of Public Relations, Philadelphia Textile Institute

The ties between the Philadelphia Section, AATCC, and the Philadelphia Textile Institute, one of the nation's foremost textile colleges, are long established. Examples of such ties are the support of an AATCC Student Chapter at PTI and the cooperative programs in education now underway between the Educational Committee of the Philadelphia Section and the Institute.

The author presents a brief but comprehensive history of the Institute to date, a look at its curricula and special services to industry, and a prediction of its future course.

NESTLED among trees in the countryfied atmosphere of the West Germantown section of Philadelphia, Pa, is the campus of one of the newest, yet the oldest textile college in this country. Newest, in that its buildings date from 1949; oldest, in that its inception occurred prior to that of any other textile school. The Philadelphia Textile Institute was organized in 1884. It represented the most important effort that had been made in the United States to organize the instruction in an art school, with direct reference in its application to the actual needs of the textile industry.

The development and realization of this purpose was accomplished through the generous cooperation and support of the most energetic and influential members of the Philadelphia Textile Association. This Association, founded in 1882, had kept prominent, among the objects for which it was created, the fostering of technical education. Its members represented the progressive element of the industry in Philadelphia and vicinity.

These industrialists were well aware of the progress of textile schools in Europe and recognized that the United States could not hope to maintain the best market for its products unless these products combined the highest skill in manufacture and the best taste in design. At that time no thorough school existed in this country, and it was necessary to begin without previous knowledge of the exact methods to be adopted.

Theodore C Search, president of the Philadelphia Textile Association and vice-president and chairman of the Committee on Instruction of the Pennsylvania Museum and School of Industrial Art, took the initiative in this work and to his devoted and untiring service on behalf of the Philadelphia Textile Institute from its inception, more than to all other agencies combined, its success is due.

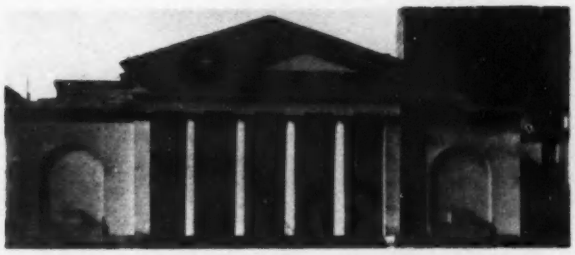
This first project in textile education was made known to the trustees of the Pennsylvania Museum and the School of Industrial Art, who promptly absorbed the new school as a department and placed at its disposal rooms in their school building located at 1336 Spring Garden Street, Philadelphia. The teachers were engaged, the industry responded to the endeavor with gifts of machinery and equipment, and in the fall of 1884, for the first time in the history of this country, an organized class of enthusiastic students assembled to receive instruction in weaving and textile design.

The seasons of 1884-1885 and 1885-1886 were prosperous, and they proved conclusively that such a school was not only a great addition to the textile-manufacturing community of Philadelphia, but an element of strength to the whole country. Friends of the enterprise visited the best schools in Europe in the interest of the institution, and whenever methods were found superior to our own, they were put into practice.

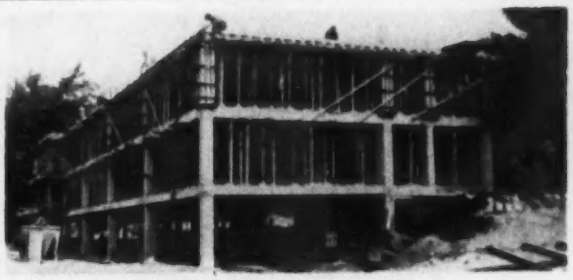
The first home of the Philadelphia Textile Institute at 1336 Spring Garden Street, Philadelphia, Pa

E A Possell, first head master of the school, quickly saw that the inclusion of instruction in chemistry and dyeing was necessary to broaden the scope of training and give a completeness to the curriculum. Therefore, in the fall of 1887, the Department of Chemistry and Dyeing was organized and accommodations were obtained a few doors from the main building. A large laboratory was equipped and supplied for carrying on experimental work in chemistry and in dyeing different fabrics. It was no longer incumbent upon anyone to visit Europe for technical instruction in textile art, for this school was fully prepared to supply technical information on all subjects concerned with designing, weaving, dyeing, finishing and cleansing of fabrics.

* EDITOR'S NOTE: This article is the first in a proposed series. Subsequent AATCC Convention issues of American Dyestuff Reporter will carry informative articles on the textile colleges within the jurisdiction of the regions sponsoring the convention.



The Philadelphia Textile Institute Building, Broad and Pine Streets, Philadelphia, occupied from 1893 to 1949



The new PTI Residence Hall which will be completed for the Fall semester

In 1891 E W France, a teacher in the school, was given the responsibility of head master, a position he was to hold for the next 50 years. In 1892, a course in Freehand Drawing, Design, and Color Harmony was added to the curriculum, further broadening the scope of instruction.

In the Spring of 1893 the public of Philadelphia generously responded to an appeal for assistance. This, combined with a large gift of William Weightman, a drug manufacturer, enabled the institution to purchase a much-needed building at the northeast corner of Broad and Pine Streets in the center of the city. Prior to this purchase, the school had been continually hampered by want of room required for its increasing student body. It was a source of great satisfaction to its managers that this drawback to its development and limitation to its usefulness was effectively removed. The building contained accommodations for over 1000 students with room for chemical and mechanical laboratories, lecture rooms, administration rooms and an ample library.

By the turn of the century, the Philadelphia Textile School, as the institution was known at that time, had become recognized internationally as being one of the finest of technological schools. Additions had been made to the faculty, original courses had been expanded, and new ones had been added, including instruction in patent law, wet and dry finishing, cotton and wool carding and spinning, hand-loom operation, jacquard design and application, mechanical drawing, worsted drawing and spinning, wool grading and sorting, knitting, and in the modern languages. The Philadelphia Textile School was indeed one of the most diversified and most complete textile instructional centers in the world.

After the turn of the century, the Philadelphia Textile School continued its growth more slowly. The school became well established in its new quarters and its graduates continued to be well received by industry. Departments that had been incorporated in the curriculum went through the slow process of change and refinement with further technological developments. The administrative department of the school did change to some extent because of expansion. Mr France, who had been head master, took on the title of director, and in the ensuing year two teachers, B C Algeo and Richard S Cox, were made assistant directors.

In 1937, in cooperation with the Business Section of the Wharton School of Finance and Commerce, University of Pennsylvania, two additional and special lecture courses were added to the curriculum for Senior classmen. These were required courses covering "Problems in Textile Economics" and "Cost Accounting in Textile Mills." Hence, a step was taken toward full collegiate status.

In 1940, after fifty years of service as head of the School, Mr France retired and assumed an emeritus status. M E Heard, a graduate of the A French Textile School, Georgia Institute of Technology, and who had been head of the Textile School at Texas Technological College, succeeded Mr France as dean and head of the Philadelphia Textile School. At the same time, the two assistant directors were given the status of assistant deans.

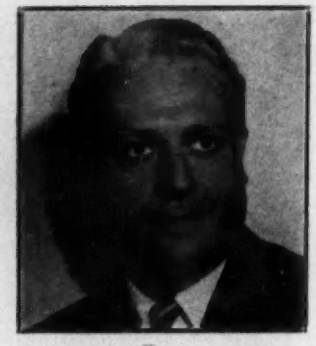
1941 was a notable year in the School's history. It was then that the Commonwealth of Pennsylvania first authorized the School to grant the degree of Bachelor of Science in Textiles to graduates who satisfactorily completed the four-year courses. At the suggestion of the Alumni Association, the title of the School was changed to Philadelphia Textile Institute.

1941 also saw the addition of more business courses, including economics, production control, and marketing. Courses in physics, mathematics, psychology, history, and English were also added. With its curriculum and faculty fully complying with State requirements, the Institute had at last attained full collegiate status in its home state. The degree of Bachelor of Science in Textiles was changed to Bachelor of Science in Textile Engineering. In June of 1943 the first degrees were granted to Leopold Freedman and George Alexander Litchfield, Jr.

In June of that same year, Dean Heard resigned as head of the Institute and Richard S Cox, the assistant dean, was appointed in his place.

In 1943, the Committee of Instructions, which had served in a dual capacity for both the Art School and the Textile School of the parent Philadelphia Museum of Art (the new name for the old Pennsylvania Museum of Art), agreed to the formation of separate Boards of Governors of the two schools. This was done because the growth of both schools as well as their individual differences made administration by a single group difficult. This creation of separate boards was the beginning of movement that was to be culminated in the complete separation of the Institute from the Museum of Art in a very few years. Members of this new board felt that the time was ripe to find other quarters for the Institute. Before making any commitments, however, they realized that a tremendous amount of money would be needed for such a venture, and out of this came the creation of The Philadelphia Textile Institute Foundation, a nonprofit corporation devoted to the advancement of textile education. In June of 1944, after months of preliminary organization, corporate papers were granted to the Foundation.

A campaign was started to supply the funds so necessary to allow the Institute to obtain other quarters. The Foundation in 1946 purchased a 12½-acre site in the Germantown section of Philadelphia for the Institute's new home. Two years and over a million dollars later, in September, 1948, ground was broken for the new building. In April, 1949, 90 percent of the edifice was finished for the corner-stone-laying ceremonies. On October 6, 1949, the building was completed and ready for occupancy by students and faculty. The new Hesslein Library was finished soon afterward. It was shortly after moving to its new location that the Institute was incorporated and separated completely from the Philadelphia Museum of Art.



BERTRAND W HAYWARD
President, Philadelphia Textile Institute

The year 1947 saw the arrival of Bertrand W Hayward, who came to the Institute to accept the position of director. Mr Hayward continued in this capacity until 1954 when he became president.

Richard S Cox, dean of the Institute, resigned from his administrative post, and in September of 1953 went into the PTI Foundation to devote all of his time as executive secretary and treasurer. In June, 1954, he was elevated to dean emeritus as a tribute to his many years of service and his accomplishments.

In October 1954, the Philadelphia Textile Institute took another step in the expansion and improvement of its facilities when ground was broken for the new Residence Hall. This building, which will house 150 students, will be available for occupancy for this fall semester, 1955.

The postwar years also saw curriculum expansion and an increased faculty. Today, PTI offers courses in textile education at the highest level. A research department has been added. Students may pursue four-year courses that lead to a BS degree in Textile Engineering and in Chemistry and Dyeing. Three-year courses leading to a diploma are also offered in both fields. Evening-school students may obtain a certificate upon completion of six years of study.

Instruction is now offered in many different courses, with the aim towards having the PTI graduate well equipped to take his place in the textile industry.

Courses in business management include business administration, textile economics, industrial management, marketing, introductroy accounting, and cost accounting.

The chemistry student may take inorganic, qualitative analysis, advanced inorganic, quantitative analysis, textile chemistry, organic, fiber chemistry, textile chemical analysis, physical chemistry, chemistry of dyestuffs, and qualitative organic analysis. In conjunction with the chemistry courses, there are seven separate courses in dyeing, one in textile printing, and one in textile finishing.

In fabric design and structure, courses are offered in color, fabric construction, fabric styling, fabric development, fabric analysis and structure, jacquard fabrics, and technology of weaves.

The Knitting Department includes courses in knitting analysis, circular knitting, flat knitting, warp knitting, and knitting design.

In mathematics, the PTI student is offered algebra, trigonometry, analytic geometry, differential calculus, and integral calculus.

In the physical sciences, engineering drawing, mechanics, physics, and microscopy are provided.

The humanities are covered by courses in psychology, history, English composition, public speaking, and American and European literature.

Additional courses are offered in textile testing, physical testing, weaving, and various courses in yarn manufacturing.

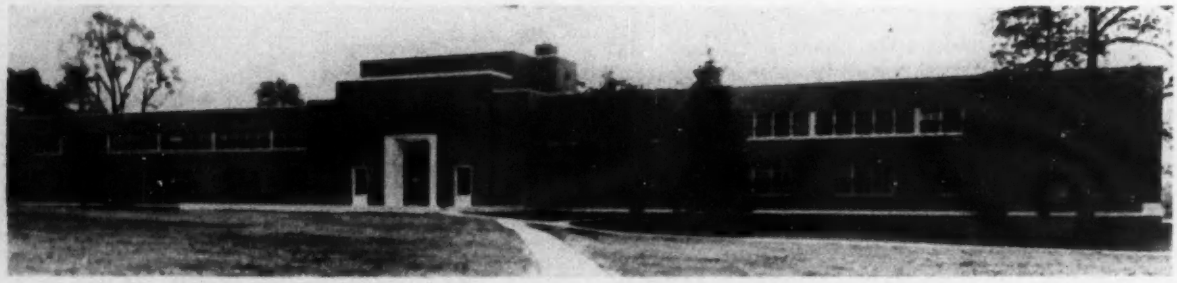
The Institute also has conducted special textile courses in conjunction with the training programs of individual industrial plants and associations. For example, in 1954 the Philadelphia Section of the American Association of Textile Chemists and Colorists took advantage of the fine facilities of the Institute and sponsored classes. These were so successful that the Philadelphia Section will again hold sessions beginning in September. The courses this year will be entitled "The Finishing of Textiles" and "Thermodynamics and Its Application to the Theory of Dyeing."

To cite a second example, during July of this year thirty-three employees of E I du Pont de Nemours & Co, Inc, Wilmington, Delaware, took special courses at PTI.

Today, the Philadelphia Textile Institute continues to be recognized locally, nationally, and world-wide as having one of the finest educational programs to be found in textile education.

The program is by no means completed. Courses will be continually refined to keep pace with technological progress, only the finest men and women will be accepted for the faculty, facilities will be improved and buildings will be erected as the need arises and the money is made available. Even now, with the Residence Hall not yet completed, plans are in process for a new auditorium-gymnasium for which architects fees have already been paid.

The credit for the development of this great Institute belongs to many people, both in and out of the textile industry. PTI, with a great heritage, is fast approaching a period in its history incomparable with any that has passed. With the sincerity of purpose and the stick-to-itiveness of its present leaders, which has so characterized its leaders of the past, its destiny must be success.



Main building of PTI at new campus site in the Germantown Section of Philadelphia

Atlantic City, THE CONVENTION CITY

An aerial view of the convention city

ATLANTIC CITY received its start as a modern resort in 1854 when the first train arrived in June of that year. Atlantic City's first hotel was known as Bedloe's. This was followed by a place called the Cottage Retreat, and another, the United States Hotel, was practically completed when passengers arrived on the railroad's initial run.

The most famous landmark of Atlantic City is, of course, its boardwalk. The first walk, which cost $5000 to construct, was opened to the public on June 26, 1870. It was eight feet wide, one mile long, and raised one foot off the ground. Eventually it was made illegal to develop privately the real estate on the seaward side of the walk and this was the first step toward development of the present walk and the huge beachfront hotels. The second walk was built in 1879, destroyed by severe storms in the winter of 1883-84, and rebuilt in the spring of 1884. In September, 1889, it was again wrecked, rebuilt, and the fourth boardwalk dedicated on May 10, 1890. There was considerable damage in the hurricane of 1944 but this was soon rectified. A crew of specially trained carpenters are kept busy throughout the year keeping the boards in shape, and maintenance costs run as high as $100,000 a year.

Atlantic City offers about 27,000 hotel rooms. Seventeen of the most palatial hotels are on the beachfront. One of these is the Chalfonte-Haddon Hall, AATCC Convention Headquarters, whose 1000 sleeping rooms make it one of the largest resort hotel properties in the world.

There are many items of interest to the sightseer in Atlantic City: the Inlet, which is the boating center of the island; the All-Wars Memorial Building; the Atlantic City Public Library; Columbus Park, the gateway to the resort for those arriving by train; the World War I Memorial; and Bader Field, the resort's airport for sportsmen fliers. Within easy drive is the beautiful Atlantic City race course, one of the most modern plants in America. A visit to this track is one of the items on the ladies' program for the AATCC Convention.

For those who feel inclined there is golf on four courses within a few miles, horseback riding on the beach, bicycling on the boardwalk, and many other diversions. There is plenty to do in the evening with first-run motion-picture theatres, hotel grilles, night clubs and fine restaurants. Atlantic City is famous for its many eating places, for, in addition to the hotel dining rooms, there are at least 400 restaurants in the city proper. The boardwalk is lined with many attractive stores for those who would like to do a little relaxed shopping.

Autumn provides an ideal weather situation at Atlantic City for there is still the warm sunshine together with the cool ocean breezes. From a convention standpoint it provides an excellent place to combine work and play.

A section of Atlantic City's world-famous boardwalk

AATCC CALENDAR

COUNCIL
Wednesday evening, Sept 21 (Chalfonte-Haddon Hall, Atlantic City, N J); Nov 16, Jan 20 (Hotel Statler, New York, N Y); April 20; June 15; Sept, 1956; Nov 16, 1956; Jan 18, 1957.

NATIONAL CONVENTIONS
Sept 21-24, 1955 (Chalfonte-Haddon Hall, Atlantic City, N J); 1956 (Waldorf-Astoria, New York); 1957 (Boston); 1958 (Chicago); 1959 (Washington, DC)

MID-WEST SECTION
Oct 39 (Bismarck Hotel, Chicago, Ill).

NEW YORK SECTION
Oct 14, Nov 18 (Kohler's Swiss Chalet, Rochelle Park, N J); Jan 27, Feb 24 (Hotel Delmonico, New York, N Y); Mar 23, Apr 27, May 18 (Kohler's Swiss Chalet, Rochelle Park, N J).

NORTHERN NEW ENGLAND SECTION
Oct 14; Dec 9.

PACIFIC SOUTHWEST SECTION
Oct 7, Feb 6 (Gourmet Restaurant, Beverly Hills, Calif); Dec 2.

PHILADELPHIA SECTION
Oct 21 (Penn-Sherwood Hotel); Dec 2, Jan 13 (Kugler's Restaurant).

PIEDMONT SECTION
Oct 29 (Hotel Wm R Barringer, Charlotte, N C).

RHODE ISLAND SECTION
Oct 13, Dec 1 (Johnson's Hummocks, Providence).

SOUTH CENTRAL SECTION
Dec 10 (Hotel Patten, Chattanooga, Tenn).

SOUTHEASTERN SECTION
Sept 16 (Ralston Hotel, Columbus, Ga); Dec 3 (Atlanta Biltmore, Atlanta, Ga).

WESTERN NEW ENGLAND SECTION
Sept 16 (Rapp's Restaurant, Shelton, Conn); Nov 4 (Hartford, Conn); Dec 16 (Rapp's).

ACTIVITIES OF THE LOCAL SECTIONS

PACIFIC NORTHWEST——The Pacific Northwest Section held its annual outing on July 30th at the Mt Hood Golf and Country Club, Welches, Ore, located in the Mt Hood recreational area near Portland.

Winners of the various golfing events were as follows: *Low gross* — Don E Adams, Portland Woolen Mills; *Low net* — Otto E Schmidt, Pendleton Woolen Mills; *Longest drive* — Casey Hancock, Jantzen Knitting Mills; *Closest to pin* — Robert B Mulcrone, Pendleton Woolen Mills; *High gross* — Bryce Hecht, Paris Woolen Mills; *Blind bogie* — Russ Koening, Portland Woolen Mills.

In the horseshoe-pitching competition, Robert C Pickens, Portland Woolen Mills, took top honors with Robert E Newman, Jantzen Knitting Mills, second.

Prizes were awarded at the conclusion of dinner, after which a short business meeting was held.

John L Ayres, E I du Pont de Nemours & Co, Inc, and F H Ihlenburg, National Aniline Div, headed the Outing Committee for the event.

(Outing photos on page P630)

* * * * * *

PIEDMONT——Approximately 400 members, guests, and wives attended the Piedmont Section's 2-day Summer Outing, June 10-11, at Mayview Manor, Blowing Rock, N C.

An elaborate program of events featured the following activities: golf, swimming, horseshoes, table tennis, shuffleboard, putting, bridge, canasta, horseback riding, buggy and surry rides, fishing, dancing, and visits to the Cone Estate.

Winners in the various golf competitions were as follows:

LADIES

Low gross — Mrs Ira Hurd, 94; *2nd low gross* — Arlene Martin, 97; *low net* — Mrs Richard W Powell, 72; *2nd low net* — Mrs Robert W Angstadt. Mrs Powell also took top honors (for both men and women) for being closest to the pin on the selected hole, as well as tying nine men in the "blind bogey" competition.

MILL DIVISION

Low gross — Gordan Eaves, Cloverdale Dye Works, Inc, 73; *2nd low gross* — Donald Gardner, Riegel Textile Corp, 79; *3rd low gross* — Bud Williamson, Holt-Williamson Mfg Co, 80; *low net* — Bill Barrineau, Crown Converting Co, and Francis Burr, Burlington Industries, 71; *3rd low net* — Al Stafford, Sayles Biltmore Bleacheries, Inc, 72.

SUPPLIERS DIVISION

Low gross — C F Gibson, Southern Dyestuff Corp, 72; *2nd low gross* — Jack Crist, Jr, Southern Dyestuff Corp, 73; *3rd low gross* — Charles Sledge, General Dyestuff Co, 78; *low net* — C F Martin, E F Feeley & Co, Jim Balloch, Jacques Wolf Co, and W E Rixon, Carbide & Carbon Chemicals Co, 70.

Winners of the specialty events in golf included: *most 4's* — Ed Feeley, E J Feeley & Co; *longest drive* — John Tillett, American Cyanamid Co; and *highest score* — Bill Colby, Emery Industries, Inc, 132.

Tied with Mrs Powell in the "blind bogey" competition were Al Stafford; John Bryant, Bryant Chemical Co; Henry Gaede, Laurel Soap Mfg Co; Jordan Dulin, Arnold, Hoffman & Co, Inc; Charles Sledge; John Tillett; Bill Bennett, Marlow Van Loan; Bill Colby; and R L Ward, Leaksville Woolen Mills, Inc.

C J Dulin took top honors in the putting competition with a 16. He was followed by Dick Jones, Southern States Chemical Co, 17; Henry Gaede, 18; Betty Whalen, 21; and Louise Johnson, 23.

(Outing photos on page P618)

AATCC Monograph No. 2

"THE APPLICATION OF VAT DYES"

$3.00, postpaid, to members

$6.00, postpaid, to nonmembers

SEND CHECK OR MONEY ORDER

H C CHAPIN, SECRETARY, AATCC • P O BOX 28 • LOWELL, MASS

NOMINATION NOTICE

THE Councilors representing Sections, in their capacity as Nominating Committee, have nominated Raymond W Jacoby for president in the year 1956. The nomination of any other Senior member, signed by fifty or more Senior members, may be filed with the secretary not later than October 1st, and will be given equal standing on the ballot.

The members of the Northern New England, Rhode Island and Western New England Sections will elect a vice president for the New England Region. Having served three years, Mr Linberg is no longer eligible. The Councilors from this Region have nominated Ernest R Kaswell.

The members of the Niagara Frontier, Hudson-Mohawk, New York and Philadelphia Sections will elect a vice president for the Central Atlantic Region. Because of illness, from which, happily, he is partially recovered, Mr Baxter's name was withdrawn from nomination. The Councilors from this Region have nominated Frederick V Traut and Henry L Young.

The members of the Piedmont, Southeastern, South Central and Washington Sections will elect a vice president for the Southern Region. The Councilors from this Region have nominated Walter M Scott.

The members of the Mid-West, Pacific Northwest and Pacific Southwest Sections will elect a vice president for the Western Region. The Councilors from this Region have nominated Joseph H Jones.

A nomination for vice president from any Region, signed by twenty-five or more members of that Region, may be filed with the secretary not later than October 1st, and on the ballot will receive equal standing with other nominations for that office.

HAROLD C CHAPIN
Secretary

EMPLOYMENT REGISTER

This column is open for two insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the Secretary.

55-13

Education: BS, textile chemistry

Experience: Chemist and foreman in bleaching and dyeing department.

Age: 31; married; references; executive position on U S east coast desired.

8-15, 8-29

Membership Applications

August 12, 1955

SENIOR

Grant H Brewin—Pres, Dyotherm Corp, Clementon, N J. (N Y) Sponsors: H E Millson, R A Schoellhorn.

John D Bussey—Supervisor, Dyestuff Mfg Dept, Arnold Hoffman & Co, Inc, Dighton, Mass. (R I) Sponsors: H G Grundy, P S Buffington.

Yves A Cerf—Chemist, Manufactures de Velours et Peluches, Lyon, France. Sponsors: P J Theve, J Corbiere.

H Paul Ebert—Supt, Arista Mills Co, Winston-Salem, N C. (Pied) Sponsors: R F Morris, W R Joyner.

Ralph W Morgan—Dyer, Crystal Springs Bleachery, Chickamauga, Ga. (S E) Sponsors: J D Mosheim, H P Loveless.

Raymond Polansky—Chemist, American Cyanamid Co, Bound Brook, N J. (N Y) Sponsors: W Nakajima, J L Borstelmann.

David J Posten—Chemist, Carbide & Carbon Chem Co, Div, Union Carbide & Carbon Corp, So Charleston, W Va. (N Y) Sponsors: T A Feild, Jr, H K Tounsley.

JUNIOR

Huston B Taylor—Lab tech, The Chemstrand Corp, Decatur, Ala. (S E) Sponsors: E V Burnthall, T H Guion.

Marvin E Taylor—Lab tech, The Chemstrand Corp, Decatur, Ala. (S E) Sponsors: E V Burnthall, T H Guion.

Paul R Tully—Textile chemist, Chicopee Mfg Co, Fin Div, Chicopee Falls, Mass. (W N E) Sponsors: M Sparks, Jr, J W Byam.

ASSOCIATE

Daniel L Schoenholtz—Mgr, Laminated Foils, Inc, Woodside, N Y. (N Y)

CORPORATE

King Philip Finishing Co
The Pond Lily Co

Piedmont Section Outing • June 10-11, 1955 • Blowing Rock, N C

(Outing report on page P616)

Proceedings of the American Association of Textile Chemists and Colorists

Hudson-Mohawk, Philadelphia, and Southeastern Sections

DEVELOPMENTS IN THE USE OF SALT IN THE TEXTILE-DYEING INDUSTRY*

WILLIAM W HARRIS, JR

International Salt Company, Inc
Scranton, Pa

The latest developments in salt-brine purification, methods of dissolving and storing salt, and new textile-dyeing reagents are discussed by the writer with a view toward answering the ever-increasing request of the textile chemist for this information.

The writer discusses in detail a calcium-free textile dyeing reagent which is being employed extensively by the industry. Also discussed in detail is the latest development in purifying salt brines made from inexpensive rock salt.

INTRODUCTION

DURING the last decade a complete revolution has taken place in the methods of applying sodium chloride in textile dyeing and also in the amount of consideration given this very important item by both the textile chemist and the plant management. There was a time when salt was accepted as something that had to be used in dyeing with very little regard given, in most cases, to what kind of salt was used, its purity, how it was stored, or what effect the quality of the salt had on the quality of the finished goods. This has all changed with the advance of chemistry in the industry. Because of chemical research and the training conducted by our colleges, dyestuff manufacturers, salt producers, and the chemical industry as a whole, the textile chemist today is just as concerned with the quality and methods of use of salt as he is with any other ingredient used in textile dyeing.

Largely as a result of research and development, the art of salt handling, storing, dissolving, purifying and the methods of use of salt have progressed to an exact science in the textile-dyeing industry. It is the purpose of this paper to treat with these facts rather than with the actual techniques of application.

TYPES OF SALT AVAILABLE

There are generally five types, or grades, of salt available to the textile chemist. Requirements of purity, handling characteristics, and price usually govern the type selected for use. The types available and the characteristics of each are as follows:

ROCK SALT———This type of salt is mined, crushed, screened for size, and delivered to the customer without any further treatment. Although amazingly high in purity, this type of salt does contain some impurities which were present before mining. An average analysis of a good grade of rock salt should show a sodium chloride content of 98% or better for salt produced in the North, and 99% or better for salt produced in the southern part of Louisiana. The impurities consist chiefly of calcium sulfate and magnesium chloride.

The chief advantages of rock salt are lower cost and superiority in handling and storing characteristics in comparison with any other type of salt.

EVAPORATED SALT———This is an evaporated granulated salt commonly referred to as evaporated salt. This type of salt is most commonly produced from mined rock salt or from brine wells. In either case, the salt is dissolved and the resulting brine is processed through evaporators. The grain size of this salt is very small as compared with that of rock salt.

Evaporated salt is more expensive to produce than rock salt and consequently costs the customer more. Although this type of salt has a sodium chloride content of 99.5% or better, its content of calcium sulfate and magnesium chloride is only slightly less than that contained in rock salt.

The storage and handling characteristics of evaporated salt are not too good. These will be discussed later in the paper.

PURIFIED SALT———This type of salt is produced in the same manner as evaporated salt and is then submitted to a purifying process. It is exceptionally high in purity but is rarely used in textile dyeing today.

ANHYDROUS SODIUM SULFATE ———Commonly called Glauber's salt. As you are well aware, this type of salt is used in dyebaths having a pH of 5½ or lower. It is also used in some cases where it is necessary to retard the exhausting action of acid dyes on wool as much as possible. This is most important in dyeing pastel shades. The extremely high cost of Glauber's salt and the fact that it cannot be stored in bulk has extremely limited its use in textile dyeing.

TNA-5———TNA-5 is a relatively new product, having been on the market for only about two years. It is a superior textile dyeing reagent produced by the International Salt Company. It is a calcium- and magnesium-free product of small, white, granular, anhydrous crystals, classified as a chemically pure reagent, and manufactured in such a manner as to cause it to react like anhydrous sodium sulfate in a neutral dyebath.

The cost of TNA-5 is the same as that of purified salt. It's advantages are as follows:

1) Efficient, economical replacement, pound for pound, for anhydrous sodium sulfate in a neutral dyebath.
2) Neutral, readily soluble in either cold or hot water.
3) Can be used in either the dry, fine granular form or automatically converted to fully saturated brine with the TNA-5 Dissolver.
4) Eliminates dye precipitation, produces a good color yield, level shades and a soft finish.
5) Can be used in a neutral dyebath in the dyeing of cotton, rayon, wool, or any blend of these fibers in the form of staple, yarn or piece goods.
6) Especially effective with direct or naphthol dyes; it produces excellent crock fastness and clear, brilliant colors.

TNA-5 is being used today on a rather extensive scale. It is very versatile and can be used in either dry form or in brine produced in a special automatic TNA-5 Dissolver.

* Presented before the Hudson-Mohawk Section at Albany, N Y, on Jan 14, 1955, before the Philadelphia Section at Philadelphia on Friday evening, March 4, 1955 and before the Southeastern Section at Talledega, Ala, on Feb 12, 1955.

Figure 1
Quinn Patent, "Apparatus for Making Brine"

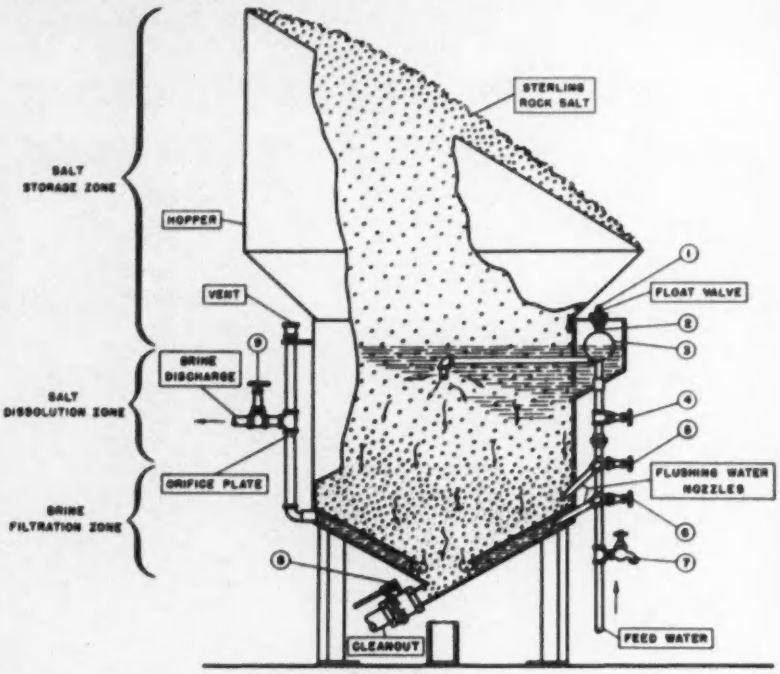


Figure 2
Sterling Model Lixator

TYPES OF DISSOLVERS

The early practice of applying salt in dry form to the dyebath has given way to the modern method of applying the salt in brine form. When salt is applied to a bath in dry form, it first dissolves into brine before it can act. Since the salt has no action until is it dissolved, the modern practice is to dissolve the salt in an automatic dissolver and to pump the brine to the dye machines. The art of automatically dissolving salt into fully saturated, crystal-clear, filtered brine with a minimum of labor has made extensive progress in the last decade.

Fig 1 shows a very early salt dissolver patented in 1897. Salt is dumped into the barrel and dissolved by the upflow action of water from the pipe grids in the bottom. The brine overflows into a small filter box on the side of the barrel. This filter box is packed with sponges for theoretical filtering of the brine. In actual practice the upflowing brine carries suspended fine salt and fine insolubles. The sponges plug up very rapidly, and the brine is muddy. Imagine dissolving a carload of salt in a batch-operated dissolver of this type.

About 30 years ago the International Salt Company began to build and experiment with salt-dissolving devices and consequently discovered the principle of self-filtration. This principle was given the name *Lixate*, a trade-mark taken from the word *lixiviate*, which means to extract or leach out a solid material by means of a solvent. Consequently, the dissolver was given the trade-mark *Lixator*. The Lixate principle can be applied to small fabricated dissolvers and to large concrete storage dissolvers of any required size.

After discovering the Lixate principle, the International Salt Company pioneered the use of automatic salt dissolvers in the textile-dyeing industry. Since that time several types of dissolvers have been patented. However, the Lixate principle of downflow self-filtration is still superior to any other known method of producing brine for use in textile dyeing.

Fig 2 shows a fabricated model Lixator for dissolving rock salt. You will note the simplicity of this design and the fact that the Lixate principle does not employ the use of gravel as a filtering medium. This is true of all Lixate rock-salt dissolvers, including the large concrete storage types.

You will note also that the body of the Lixator is a round tank with a conical bottom. Immediately above this conical bottom is a cone-shaped false bottom with a large throat opening. After the Lixator and hopper are filled with salt, water enters at the top through a distributing nozzle, and the liquid level is controlled by a float valve located in the float box. By the time the water has passed through the salt-dissolution zone, it has become a fully saturated brine. There is nothing in the brine filtration zone except rock salt. Since the brine is fully saturated by the time it reaches the filtration zone, it cannot dissolve any more salt. Consequently, the rock salt forms its own

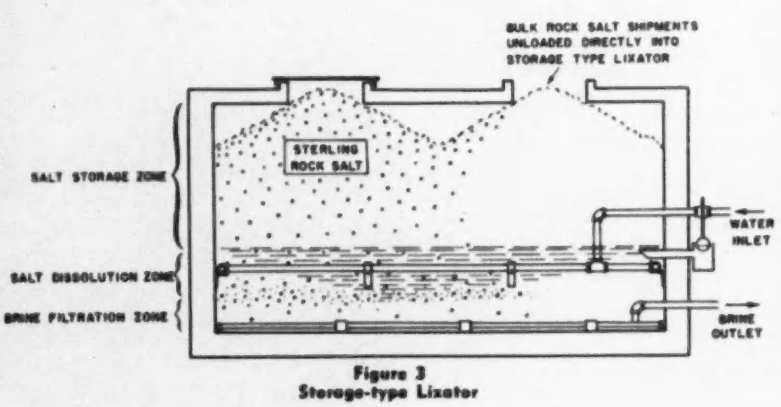


Figure 3
Storage-type Lixator

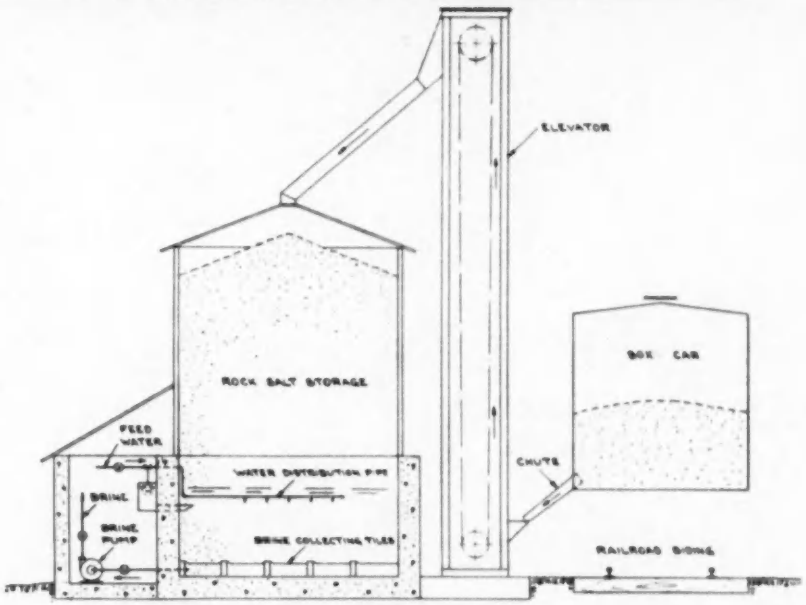


Figure 4
Silo-storage-type Lixator

filter bed and filters the brine as the brine percolates through it.

After the brine passes through the rock-salt filter bed, it flows through the throat opening in the false bottom, into the space provided between the bottom and false bottom, and on out through the brine-discharge pipe.

Since all rock salt contains a small percentage of insoluble matter, the Lixator, or any other type of rock-salt dissolver, must be cleaned out occasionally. The purpose of the filter zone is to trap this insoluble matter and to prevent it from going out with the brine. Clean-out of the Lixator is very simple. The salt is allowed to dissolve down to the filter bed, the feed water is cut off, the clean-out valve (No 8) is opened, the flushing valves (No 5 and 6) are opened, and the sludge is washed down the drain. The Lixator is then refilled with rock salt and put back into operation.

A storage-type Lixator of concrete construction is shown in Fig 3 and a silo-type storage Lixator is shown in Fig 4. You will note that shipments of bulk rock salt, either by truck or railroad car, are unloaded directly into the Lixator or silo. The storage Lixator shown in Fig 3 can be constructed completely above

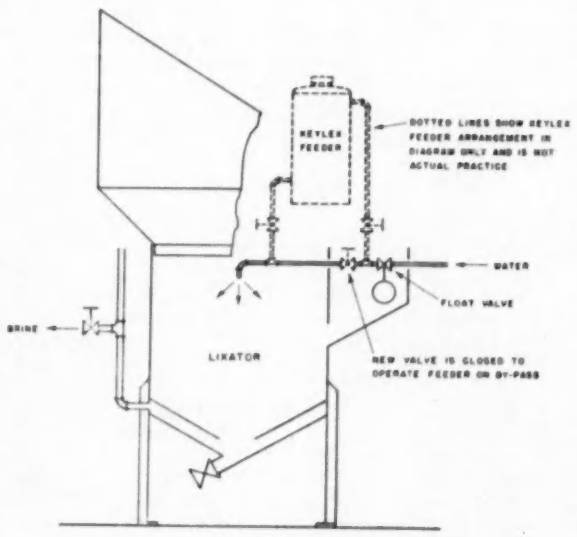

KEYLEX FEEDER
DOTTED LINES SHOW KEYLEX FEEDER ARRANGEMENT IN DIAGRAM ONLY AND IS NOT ACTUAL PRACTICE
WATER
FLOAT VALVE
BRINE
LIXATOR
NEW VALVE IS CLOSED TO OPERATE FEEDER ON BY-PASS

Figure 5
Keylex Feeder with Sterling Model Lixator

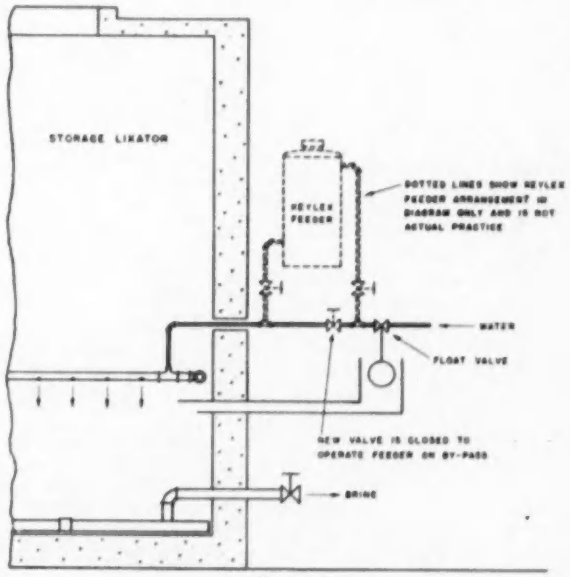

STORAGE LIXATOR
KEYLEX FEEDER
DOTTED LINES SHOW KEYLEX FEEDER ARRANGEMENT IN DIAGRAM ONLY AND IS NOT ACTUAL PRACTICE
WATER
FLOAT VALVE
NEW VALVE IS CLOSED TO OPERATE FEEDER ON BY-PASS
BRINE

Figure 6
Keylex Feeder with Storage Lixator

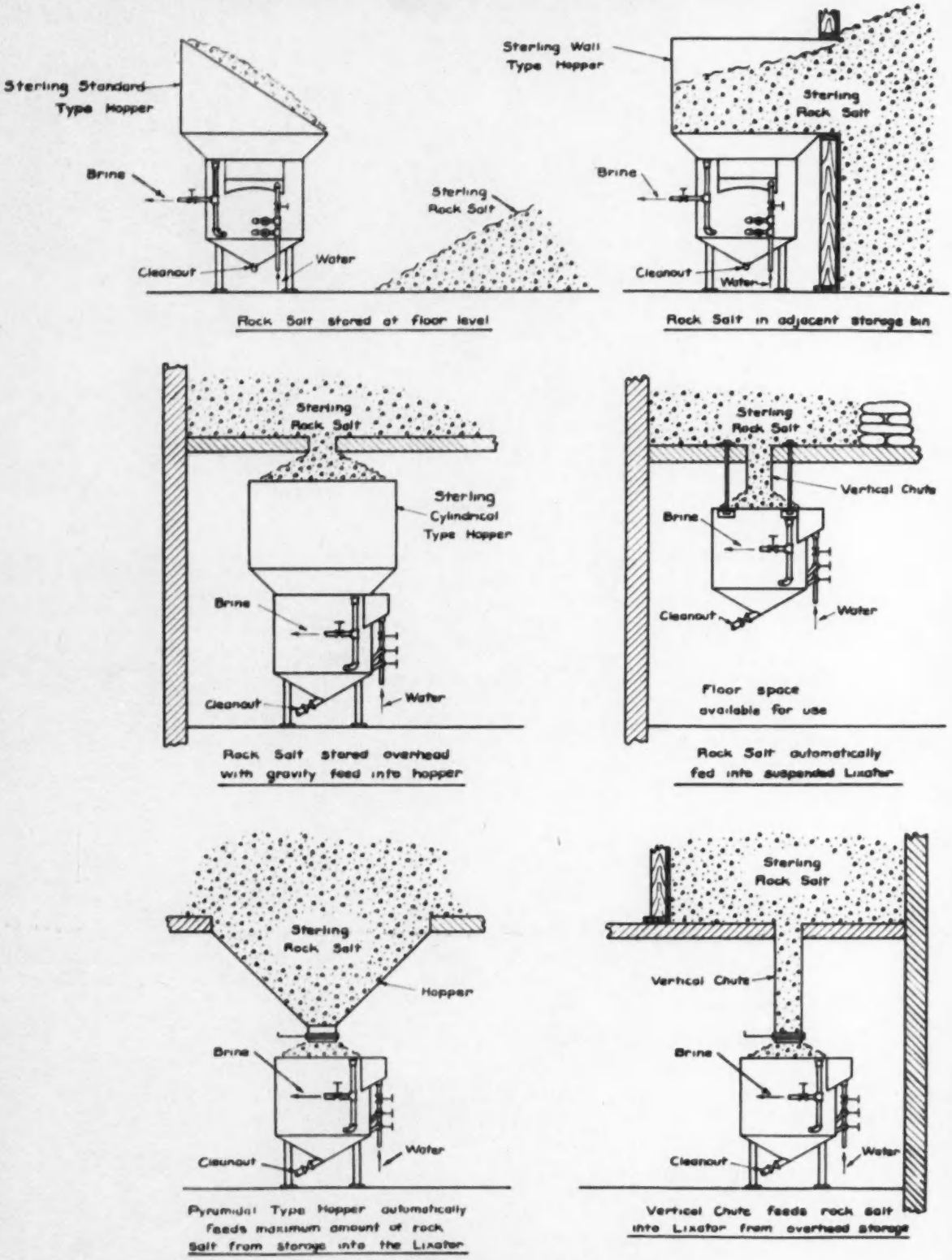


Figure 7
Sterling Model Lixator with Typical Methods of Storing and Feeding Rock Salt

ground or as far below grade level as required. The silo storage Lixator shown in Fig 4 is primarily designed for above-grade-level construction and has the advantage of requiring less ground space for construction.

The principle of operation of these two Lixators is the same as described for the fabricated Lixator shown in Fig 2. The only difference is that the brine is collected in brine-collecting tiles rather than through a false bottom.

There are other designs available for storage-type dissolvers. However, these designs usually employ the use of gravel as the filtering medium. You can readily see the many complications that will arise at clean-out time on a storage dissolver which has gravel in the bottom. Properly cleaning a large gravel filter bed is a real messy problem, and I assure you that any rock-salt dissolver, regardless of design, will require periodic cleaning.

We have been discussing only rock-salt dissolvers. However, we do have evaporated, or fine-grain, salt dissolvers especially designed for that purpose.

At this point I would like to call to your attention a very informative paper on "Modern Salt and Brine Usage in Textile Plants," by Norman M Agnew of the International Salt Company, Inc *(1)*. Reprints are available on request through International Salt Co, Inc, Scranton, Pa.

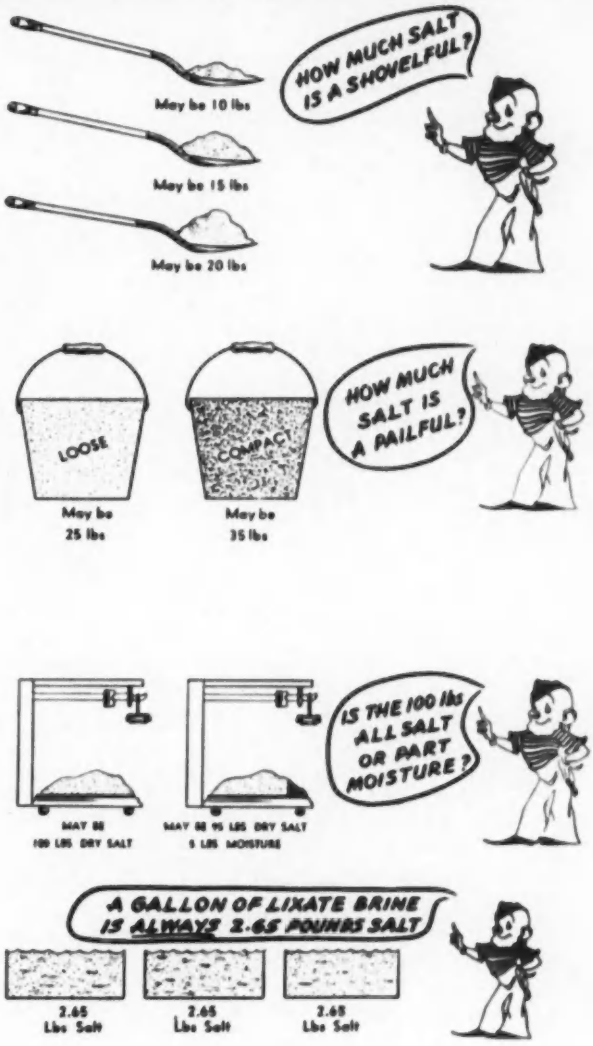

HOW MUCH SALT IS A SHOVELFUL?
May be 10 lbs
May be 15 lbs
May be 20 lbs
LOOSE
COMPACT
HOW MUCH SALT IS A PAILFUL?
May be 25 lbs
May be 35 lbs
IS THE 100 lbs ALL SALT OR PART MOISTURE?
A GALLON OF LIXATE BRINE IS ALWAYS 2.65 POUNDS SALT
2.65 Lbs Salt
2.65 Lbs Salt
2.65 Lbs Salt

Figure 8
"How Much Salt is a Shovelful?"

BRINE PURIFICATION

For many years there has been an expressed demand by the textile dyeing industry for brine free from calcium sulfate. This demand has been emphasized by the number of dye plants that have adopted the use of a calcium-free product, such as TNA-5.

The major impurity contained in rock salt, and the one causing harmful effects in dyeing, is calcium sulfate in the form of the slowly and difficultly soluble mineral anhydrite ($CaSO_4$). Although calcium sulfate is very slowly soluble in water, its solubility rate is accelerated when the anhydrite is in contact with saturated brine. For this reason, we have what is known as a calcium sulfate build-up in the brine produced in rock-salt dissolvers. Results of the work of numerous investigators on the solubility of calcium sulfate in aqueous sodium chloride solution clearly indicate that solubility in saturated sodium chloride brine is about six grams per liter, or about 2% on salt weight.

D W Kaufmann, chief research and development engineer, International Salt Company, has worked for many years on various methods of keeping the anhydrite from going into solution in the brine. Many chemicals and many methods were experimented with before his efforts were rewarded with a method that has proved as effective in practice as it did in theory. This method is to treat the dissolution water with Keylex, which is a complex polyphosphate in white granular form, manufactured in such a way as to have the property of controlled solubility.

KEYLEX ACTION———As rock salt is dissolved, the anhydrite contained in the rock salt crystal is slowly freed. As the dissolution of the salt crystal slowly exposes the anhydrite, the anhydrite is instantaneously coated with a tough film of Keylex. This coating action of the Keylex on the anhydrite prevents it from going into solution. Consequently, the anhydrite is retained on the filter bed of the dissolver, and the effluent brine has an amazingly high purity.

METHOD OF USE———Early experiments conducted to determine the most effective and practical manner in which to apply Keylex included mixing Keylex in pellet form to the salt before shipment. The chief disadvantages of this method are the following:

1) The pellets are heavier than the salt and work their way to the bottom of the car during shipment. Consequently, when the salt is unloaded, the pellets are not uniformly distributed throughout.

2) The rate of dissolution of the pellets is different from the rate of dissolution of the salt. This results in incomplete treatment of the anhydrite.

3) In order to use this type of treatment the customer's choice of salt supply is limited to one producer.

Experiments proved that pretreatment of the dissolution water with Keylex eliminated these objections and improved the purity of the brine.

Fig 5 shows the method of using Keylex on a fabricated Lixator, and Fig 6 shows the method of use on a storage Lixator. In both cases you will note that a small, economical feeder is placed in the water line between the water float valve and the salt. The Keylex is placed in this feeder and, because of the controlled rate of solubility of Keylex, any chance of overdosage or underdosage is eliminated. The feeder need only be charged once each month with a small amount of Keylex.

The end cost of Keylex treatment is only 50¢ for each ton of salt treated.

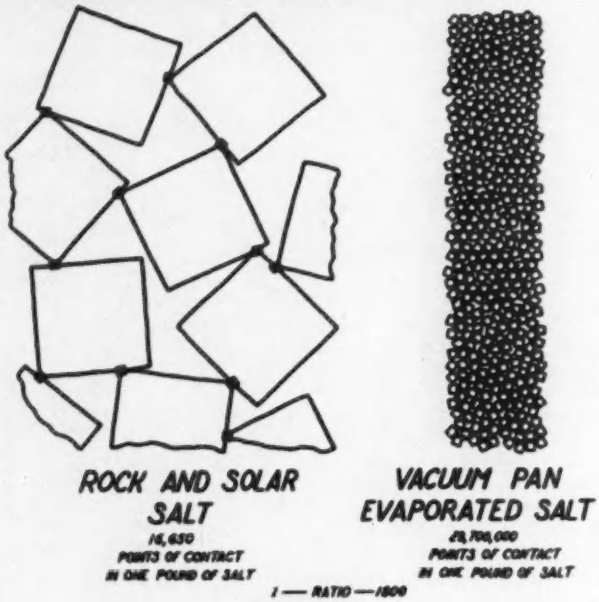

ROCK AND SOLAR SALT
16,650 POINTS OF CONTACT IN ONE POUND OF SALT
VACUUM PAN EVAPORATED SALT
29,700,000 POINTS OF CONTACT IN ONE POUND OF SALT
1 — RATIO — 1800

Figure 9
Caking of Salt

SALT HANDLING AND STORAGE

In recent years industry as a whole has become more and more aware of the cost of storage space and the cost of unloading and storing materials by hand labor. The handling and storage of salt has received considerable attention toward reducing the cost to a minimum.

It takes four men approximately four hours, or sixteen man hours, to unload a car of bulk salt with shovels and wheelbarrows. This time can be greatly reduced by the use of inexpensive scoop shovels mounted on wheels or by the use of lightweight, inexpensive, mechanical conveyors.

Salt-storage facilities should be located as near as possible to the point where the salt is delivered to the plant. Fig 7 shows six ways in which salt may be stored and fed into dissolvers. Figures 3 and 4 show two ways in which salt can be stored in storage dissolvers located outside the plant.

Dissolving the salt in an automatic dissolver located at the salt-storage point and pumping the brine to the points of use eliminate many phases of the salt handling and storage problem. Fig 8 indicates quite clearly why the amount of salt used in dry form may be inaccurate, whereas, each gallon of Lixate brine always contains the same amount of salt.

SALT CAKING——The grain size of salt is very important because it determines whether or not the salt will handle freely, will store without caking, and will dissolve freely. The finer the salt, the greater becomes the caking problem. One pound of evaporated salt has twelve times as much surface area as one pound of rock salt. All salt will collect moisture on damp days. The more surface area, the more moisture collects on the salt. The real trouble comes when the salt dries out again, because it is the wetting and drying action which causes salt to cake.

Fig 9 shows why it is easier to loosen a pile of caked rock salt than it is to loosen a pile of caked evaporated salt. One pound of evaporated salt has 29,700,000 points of contact as compared with 16,650 points of contact in one pound of rock salt. The ratio here is 1800 to 1 in favor of rock salt. It is for this reason that rock salt is always more free-flowing than evaporated, or fine-grain, salt.

SODIUM SULFATE IN WOOL PROCESSING

ACID-DYEING WOOL——I should like to call your attention to the published report of an AATCC Research Project, entitled "The Role of Sodium Chloride and Sodium Sulfate in Acid-Dyeing Wool and the Interchangeability of Sodium Sulfate and Common Salt in Acid-Dyeing Wool"*(2)*. Reprints are available on request through International Salt Co, Inc, Scranton, Pa.

Under a grant from the International Salt Company, J David Justice and Warren W Ewing performed research on this subject at Lehigh University. During the period of this research, Harold W Leitch, Chairman, AATCC Research Committee on the Chemical Technology of Wool, carried on independent research on this same subject. Mill runs were made by Arlington Mills and Merrimac Woolen Mills.

Results of the work described above proved conclusively that common salt was interchangeable with sodium sulfate in acid-dyeing wool in a ratio of 4 parts common salt to one part sodium sulfate.

Because of the fact that 4 parts common salt has to be used to produce the same results as one part sodium sulfate, no immediate advantage is gained. However, the result of this work is still of great importance to the industry and will undoubtedly prove to be of great value in the future.

SCOURING RAW WOOL —— A great deal of work has been done by private industry on the use of nonionic detergents and salt to replace soap and alkali in the scouring of raw wool with the aim of greatly reducing the cost of scouring. It is our understanding that a successful method of doing this has been established and the means to accomplish this aim will be made available to the industry sometime in the near future.

REFERENCES

(1) Agnew, Norman M, *Am Dyestuff Reptr* 35, P157 (1946).
(2) Justice, J D, and Ewing, W W, *ibid* 41, P668 (1952).

Hudson-Mohawk Section——

OPTICAL BLEACHING——WHITE MAGIC*

SIVERT N GLARUM

Ciba Company, Inc
New York, N Y

The uses of optical bleaching agents have expanded greatly within the last few years, and today they are used for widely diversified applications wherever it is desired to obtain maximum whiteness and brightness. The way in which these products produce whitening effects and the advantages over bluing agents are illustrated. The versatility of the optical bleaching agents for use on textiles is discussed, as well as the factors that must be considered in selecting the best product for a particular job.

INTRODUCTION

SINCE the beginning of civilization, man has been trying to harness all available sources of energy to serve his purposes. He has found means of utilizing the natural resources of the earth—wind, water, coal, oil, gas and wood—and converting them into light, heat, and mechanical power. Although these natural resources result from the action of the sun, they represent only a minor fraction of the sun's energy reaching the earth. If all the coal, oil, gas, and timber on earth were burned, only as much energy would be released as the sun supplies the earth every three days. Man so far has not been very successful in converting the energy of the sun directly into other forms of power which are more easily adapted to his uses. This has not been due to lack of effort, as he has been trying to do this for centuries.

One story of an early attempt to utilize the energy of the sun directly for man's purpose goes back to Archimedes, who is reported to have used a mirror to focus the sun's rays on the invading fleet of the Romans, thus setting it afire and destroying it. Numerous efforts have been made over many years to devise solar boilers and to find means of storing the heat from the sun, but few attempts have met with any degree of practical success. Much work now is in progress on utilization of the energy from the sun for heating houses, and perhaps in a few years it will not be necessary to pay fuel bills. One recent development in this field, which has been in the news, is the production of a solar battery which converts sunlight directly into electricity.

The optical bleaching agents, or, as they are sometimes called, *fluorescent whiteners*, provide one practical method of utilizing some of the otherwise lost energy of sunlight by converting invisible ultraviolet rays into visible light to enhance the appearance of a wide variety of materials, including textile fabrics.

* Presented at Jack's Restaurant in Albany, N Y, on Friday evening, Feb 25, 1955.

EXPLANATORY DISCUSSION

ENERGY FROM THE SUN——To explain how optical brighteners utilize ultraviolet rays, let us first consider the nature of the energy that comes to the earth from the sun. The most apparent portion of this radiation is the part that stimulates the eye to give the sensation of light. Another portion, the infrared, can be felt as heat. A third portion, the ultraviolet, cannot be detected immediately by the human senses but the effect on the skin is visible and sometimes painful if exposure is continued too long. Much additional radiation is received on the earth from the sun, but, for the present, only the portions mentioned above need be considered.

The over-all effect of the visible portion of this radiation from the sun under normal conditions is called white light, although it actually is made up of a great many parts, as nature demonstrates in the rainbow.

While the rainbow shows the spectrum of visible light extending from violet through the various colors to red, this does not include the complete range of radiation from the sun. On the one side beyond the red, there is the infrared radiation, which supplies the earth with heat. At the other end of the visible spectrum beyond the violet is the ultraviolet, which, among other things, gives us a tan in the summer. In Figure 1, curve 1, is shown the distribution of energy received from the sun on a midsummer's day in the wave-length range from 300 to 800 millimicrons, as measured by A H Taylor *(1)*. The relative energy

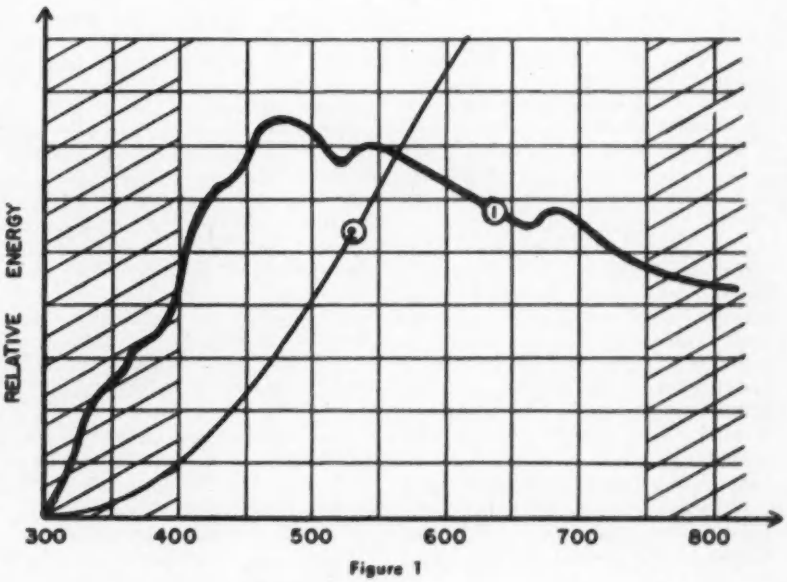


Figure 1

increases rapidly with wave length throughout the ultraviolet range and reaches a peak at about 475 millimicrons, which corresponds to visible blue light. At longer wave lengths, the relative energy decreases slowly but remains fairly high out through the infrared range. Curve 2 shows the energy from an incandescent lamp at 2800° K. Although the ultraviolet energy from the incandescent lamp is much less than that from the sun, there is still enough to be of some use.

ABSORPTION AND REFLECTANCE ———Now consider how we can make use of this energy. Whenever this radiation from the sun strikes an object, part of the energy is absorbed and part is reflected. If an object is a perfect white, all the energy within the visible range will be reflected to the eye. There is, of course, no perfect white, but it is standard practice to compare the reflectance of objects with that of magnesium oxide, which reflects about 98% of the incident visible light.

When an object is colored, it absorbs a certain part of the incident radiation and the reflected light produces a different sensation in the eye than does the light reflected from magnesium oxide. Thus, an object that appears red absorbs the shorter wave lengths and reflects to the eye the radiation received in the range of longer wave lengths. A perfect black absorbs all the energy in the visible spectrum.

One may now ask, "What becomes of this absorbed energy?" A black or a colored object cannot go on absorbing energy without limit or it would become as dangerous as an A bomb. What actually happens, of course, is that the absorbed visible energy is converted to longer wave lengths and reradiated as heat or even at longer wave lengths outside the visible spectrum. Dyers who have faced the problem of producing camouflage materials that will not show up distinctively in infrared photography have been made acutely aware of this effect in trying to meet the requirements of the Armed Forces.

As a general rule, absorbed energy is emitted at a longer wave length than the original. The optical bleaching agents have been developed to make use of this effect. These compounds are selected to absorb the short-wave-length energy in the ultraviolet region, which does not stimulate the human eye, and reradiate it at a longer wave length within the range of visible light.

By selecting compounds which reradiate at the proper wave lengths, visible light is generated that can be used to supplement the light reflected from an object and to replace that absorbed by coloring matter.

METHODS OF WHITENING——— Off-whites in both natural and synthetic organic materials, which include most textile fibers, usually are due to the presence of yellow or brown impurities. These impurities absorb some of the incident light in the blue region, upsetting the balance of what is called white light. This balance can be restored in three ways: a) by removing the coloring materials, b) by adding a material to absorb yellow light to bring the level of light reflected in this range down to that in the blue range, and c) by replacing the absorbed blue light with light from another source.

The first method, removal of the coloring material, is the most direct method and is fundamentally the best. Chemical bleaching and scouring are the basic means of producing good whites in the manufacture and processing of textiles. However, the degree of whiteness obtainable by these methods is limited by cost and the severity of treatment that can be used without damaging the material.

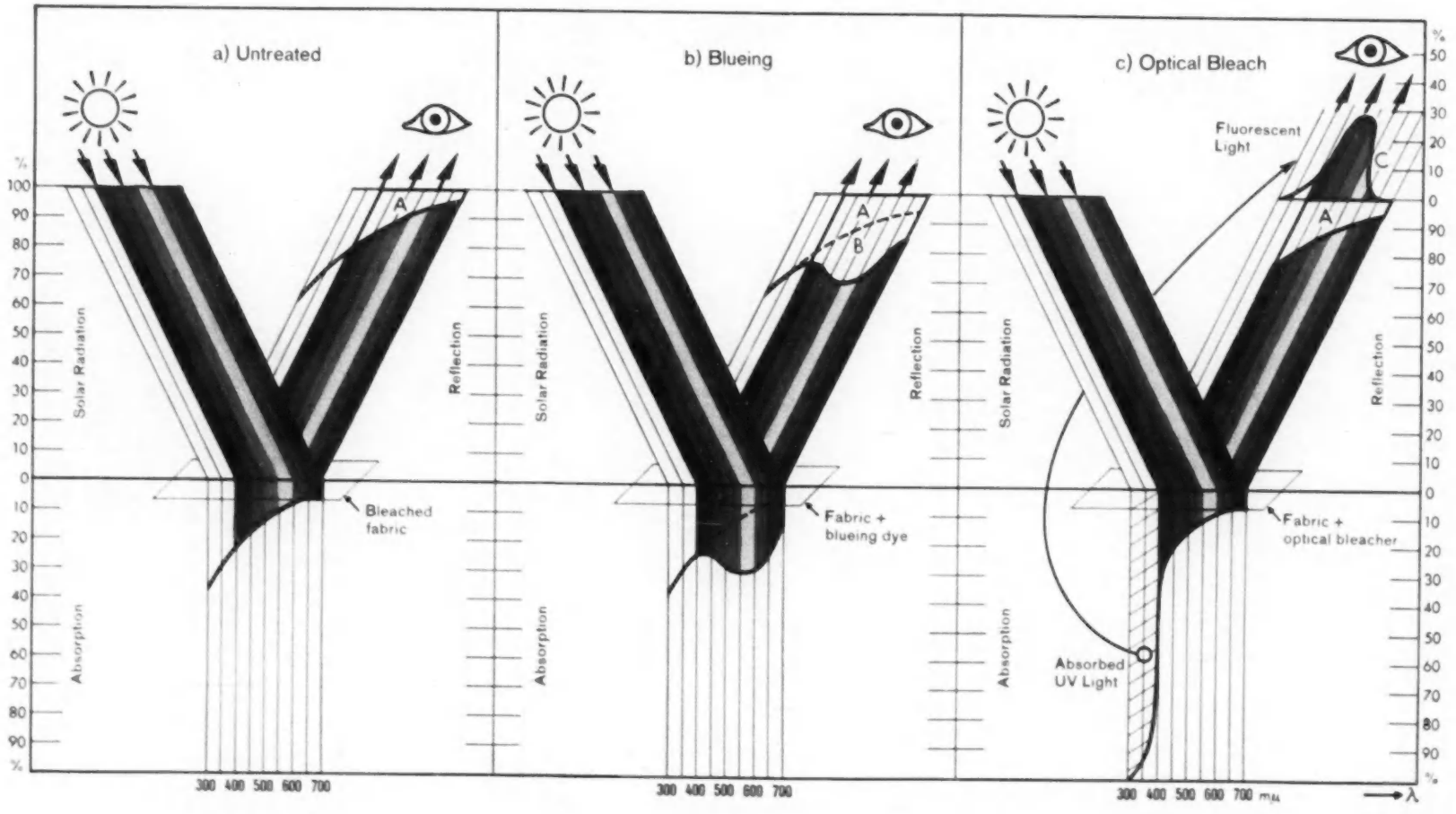
The second method of improving whiteness is by bluing. This gives an effect that is pleasing to the eye if a good white standard is not available for comparison, but the net result is actually a decrease in the total light reflected and a graying of the treated material.

The third method of producing better whites is by replacing the absorbed blue light with light from another source. One way of doing this is to increase the proportion of blue in the incident radiation, but this is not practical in most cases. Another method of increasing the amount of blue radiation in the light coming from a surface is to place small generators of blue light in it. This would have sounded fantastic a few years ago, but this is exactly what is done when a fabric or other material is treated with an optical bleaching agent. The small particles of the optical bleaching agent in the treated material generate blue light when exposed to ultraviolet radiation, and this is added to the reflected light just as if millions of tiny electric lights were present. The optical bleaching agent takes in the ultraviolet energy and converts it into visible light just as an electric generating plant converts coal, oil, or water power into electricity, which, in turn, is converted into visible light in the ordinary electric lamp.

These different methods of improving the whiteness of materials are illustrated in Figure 2 *(2)* on the opposite page. The diagram at the left (a) shows effect when sunlight is reflected from an ordinary "white" surface. The light coming from the sun through the visible and ultraviolet range is represented by the upper left-hand section of the illustration. This strikes the white surface at the O axis line, and part of the incident radiation is absorbed and part is reflected. The portion absorbed by the surface is indicated by the curve below the O axis line, and the light reflected, by the upper-hand section of the diagram. A perfect white would reflect all the incident radiation in the visible range, but, under actual conditions, the reflected light reaching the eye is always short some absorbed light, as indicated by the area A. More of the incident radiation is absorbed at the lower wave lengths, so that the reflected visible light is richer in yellows and oranges than in blue and the reflecting surface will appear to be somewhat yellow.

The center diagram (b) illustrates the effect of adding a bluing agent. The energy striking the surface is the same, but, in this case, it will be noted that there is a great deal more absorption of light in the yellow region. The dashed line shows the amount of light absorbed by the untreated material, as shown in (a), and the area between the dashed line and the solid line represents the additional light absorbed by the bluing agent. The light reflected has been reduced accordingly, as the reflected light plus the absorbed light must always equal the incident light. As a substantial amount of the yellow and orange light reflected by the untreated material has been removed, the net result is a better balance over the range of visible light, and a more pleasing white is obtained. Nevertheless, it will be noted that the total amount of reflected light has been reduced further by the area B and the amount of incident light lost is now A + B. The reflecting surface may appear more nearly white, but it actually has been made duller and grayer by addition of the bluing agent.

The effect of treating the reflecting surface with an optical bleaching agent is illustrated in the diagram at the right (c). The incident radiation is the same as before, and the absorbed and reflected visible light is still essentially the same as with the untreated material. In this case, however, the absorption of the ultraviolet has been increased enormously, and this energy has been transformed into visible light, as indicated at the upper right of the figure. This visible light generated by the optical bleaching agent is predominantly blue, and when this is added to the reflected light, it replaces the light absorbed by the yellowing agents and supplements the reflected light, restoring balance to the radiation reaching the eye. With a bluing agent, balance was obtained by pulling the strongest radiation down


a) Untreated
b) Blueing
c) Optical Bleach
%
Solar Radiation
Reflection
Absorption
A
B
C
Bleached fabric
Fabric + blueing dye
Fabric + optical bleacher
Fluorescent Light
Absorbed UV Light
300 400 500 600 700 mμ
λ

to the level of the weakest, while with optical bleaches balance is obtained by building up the weakest radiation to the level of the strongest. Thus, the optical bleaching agents produce the maximum whiteness and brilliance.

USES

This is interesting in theory, but what are the practical applications and effects? Optical bleaching agents are being used today on almost every material where whiteness or clarity of color is important, such as the following:

Furs	Foods
Leather	Paper
Hair	Lacquers
Plastics	Detergents
Adhesives	Textiles

The practical applications are so numerous that it would be very difficult to give a complete list of all of them.

Applications to furs generally are made as aftertreatments. On leather, optical bleaching agents can be applied during the usual steps of processing. These compounds have been used in cosmetic preparations to impart greater brilliance to the hair of ladies who, shall we say, prefer the silver tones.

To improve the whiteness or clarity of plastics, optical bleaching agents may be milled or ground in, or put into solvent solutions. They are used in adhesives to overcome the discoloration usually caused by such products when used on light-colored materials.

The use of additives in foods is highly restricted in the United States, but in other countries, optical bleaching agents have been used for whitening sugar and flour. The amounts required for such applications are usually no more than a hundredth of one percent.

Whiteness is of great importance in the paper industry, where optical bleaching agents are widely used. They may be applied in the beater, as an aftertreatment, or in coatings.

The brightness and clarity of lacquer and varnish coatings are markedly improved by the addition of small amounts of fluorescent whiteners. This is especially important in coatings for paper where it is desirable to preserve the whiteness of uncolored areas and the brightness of colors.

The largest use of optical bleaches today is in soaps and synthetic detergents. These bleaching agents can be used to whiten the products themselves, but more important is the effect in whitening the textile materials washed with the detergents. The products used for these applications are amazingly efficient. As little as 1 part per million of some of these in the laundry bath gives a very pronounced whitening effect. There are few laundry detergents on the market today that do not contain an optical bleach. If you look at your handkerchief or white shirt in so-called dark light, or ultraviolet rays, you probably will find that it has been treated with an optical bleach in laundering.

TEXTILE APPLICATIONS ——— Of greatest interest to us as a textile group are the uses of the optical bleaching agents in textile processing. A major part of the impetus to the development of these products has come from the demands of textile manufacturers. In response to these demands, optical bleaching agents have been developed for almost every fiber on the market to suit widely varied application conditions.

We frequently receive requests for "a sample of your optical bleach for textiles." However, it is not quite as simple as that. The optical bleaches are similar in many ways to dyes, and, just as there is no one dye that can be applied to all fibers, there is no one fluorescent whitener that can be used on all fibers.

It has been necessary to develop a great many different types of dyes to meet varying requirements for different fibers, shades, and degrees of fastness; and optical bleaching agents have been developed to meet similarly varied requirements. The exhibit shown illustrates the varied affinities of optical bleaching agents for

Cotton	Nylon
Viscose	Orlon
Acetate	Acrilan
Wool	Dacron

Some of these products are so specific that they show an effect on only one of the synthetic fibers, for example. Others are effective on several fibers.

The large number of fluorescent whiteners now available may seem confusing at first, but the situation will appear much simpler if it is recognized that it is possible to obtain excellent effects on all the most-used fibers with only two optical bleaches. One can be selected which is effective on the cellulosic fibers, and a second one can be chosen which is effective on wool, nylon, Orlon, acetate, silk, and Vicara. These two products would appear to cover most of the basic needs for treating textiles; however, a wider range of brighteners becomes necessary as additional requirements are imposed.

In addition to differences in fibers, the conditions of application must be considered. In some cases it may be desirable to treat by padding, in others by exhaustion. Sometimes it is desirable to treat under acid conditions, sometimes under alkaline. Very often it is advantageous to apply the optical bleaching agents in one of the regular steps of processing, such as bleaching, scouring, or finishing. In these cases, consideration must be given to both the chemical and physical requirements.

In selecting the best product for a particular job, it is necessary to specify

1) The fiber to be treated
2) Desired conditions of application
3) Cost wanted
4) Fastness requirements

A selection then can be made in the same way that a dye is chosen to do a particular job.

Sometimes people have been disappointed in the results obtained with optical bleaching agents because they have expected too much. Efficient as these agents are, they cannot give out more energy than they receive. In Figure 1 it is shown that the energy from the sun or an incandescent lamp in the visible range is relatively much greater than in the ultraviolet range. If a large amount of the visible light is absorbed by colored matter in a fabric, it is impossible to replace all of this light by converting energy from the ultraviolet, because the required amount of energy is not available. Except in a few cases, it is not possible to eliminate bleaching and scouring entirely. By the use of optical bleaches, it is possible, however, to reduce the severity of bleaching and scouring or to overcome deficiencies in these operations. Treatment with a fluorescent whitener in combination with a full bleach gives extra brilliance and sparkle to whites that can be obtained by no other practical means.

METHODS OF APPLICATION——— In general, the methods of applying optical bleaching agents to the various fibers are similar to those for applying dyes to the corresponding fibers. The whitening agents for cotton, for example, are very similar in behavior to direct dyes as pointed out in an earlier paper *(3)*. They may be applied by either pad or exhaustion methods. One difference from dyes is in the amount used. Generally, the quantity required for maximum effectiveness is much less than 1% of active material. In fact, it is disadvantageous to use too much. Figure 3 shows the change in fluorescence with amount of optical bleach for three products applied to cotton. In every case the fluorescence reaches a maximum and then starts to decrease at higher concentrations. Above the concentration at which the fluorescence starts to level out, there is danger of discoloration. This is typical of the behavior of all fluorescent materials.

The optical bleaching agents have been developed to offer much greater versatility than dyes in their application possibilities.

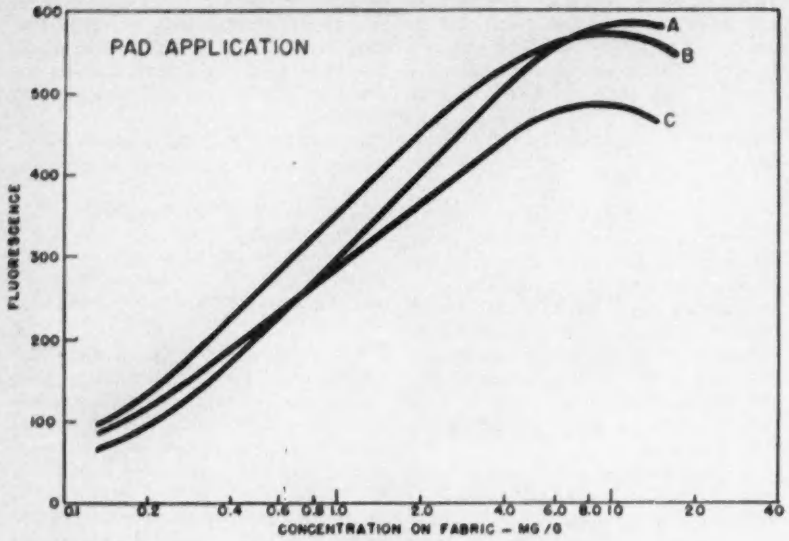


Figure 3

In addition to direct application by the usual pad and exhaustion methods, whitening agents are available which, in many cases, can be applied during bleaching, scouring, dyeing, printing, or finishing so that no extra operations are required. This makes the use of these products easy and economical.

Continual progress is being made in the development of improved optical bleaching agents. Among the most recent developments is a new product for Dacron, which is not whitened by previously available products.

The poor light fastness of optical bleaching agents has been a big drawback in many cases. One of our latest developments is a new product for nylon which withstands light exposure many times longer than earlier products. It is hoped that this is just the first of a series of products which will offer good light fastness on all fibers.

ACKNOWLEDGMENT

The author is indebted to his colleagues, both here and in Switzerland, for the material and assistance provided by them in the preparation of this paper.

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(Outing report on Page P616)

Mid-West Section——

THE DYEING OF ORLON TYPE-42 ACRYLIC FIBER WITH CATIONIC DYES

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In this paper the application of cationic dyes to Orlon Type-42 acrylic fiber is discussed with particular reference to the new Sevron dyes, which give a full range of suiting shades with light fastness adequate for men's wear. The use of Du Pont Retarder LAN textile-processing agent, as well as a new retarding agent (Du Pont Retarder DS) for obtaining dye levelness, and the effect of temperature on dyeing rate are indicated. Promising techniques for the partial stripping and leveling of cationic dyes on 100% Orlon, as well as blends of Orlon with wool or the cellulosic fibers, are introduced. Finally, procedures are presented for the simultaneous dyeing of blends of Orlon and wool.

INTRODUCTION

AT THE present time, Orlon Type-42 acrylic fiber in the form of rawstock, top, yarn and piece goods is being successfully dyed in a full range of shades. Blends of Orlon with wool or the cellulosic fibers in the form of yarn and woven or knit fabrics are satisfactorily dyed in solid or contrasting shades. In a relatively very short time, Orlon has been accepted as *the* fiber for sweaters with the result that more than one half of last year's production of Orlon went into sweater manufacture. The development of processes for making high-bulk yarns of Orlon has contributed materially to the success of Orlon in sweaters. Recently, very promising results have been obtained in the development of dyeing procedures for hand-knitting yarns of high-bulk Orlon. Tow dyeing to obtain *dyed* yarns which may be bulked by a steaming operation is in its early stage of development. This process will offer a means of producing multicolored designs in high-bulk knit or woven fabrics and thus will greatly increase the potential uses of Orlon. In short, it is very evident that the future will bring greatly expanded uses for Orlon acrylic fiber.

The literature reporting the development of the dyeing technology of this fiber is extensive *(1-5)*. Probably no other fiber can be dyed with as many classes of dyes to obtain such excellent light and wet fastness with each class. Thus, disperse dyes for pastel shades have surprisingly good light fastness and excellent wet fastness. Because of these properties and their ease of application to obtain excellent levelness, these dyes have been used extensively for dyeing light shades on sweaters of Orlon, as well as on rawstock and yarn. By the use of acid dyes applied by the copper method, a full spectrum of shades with good to excellent light fastness and good wet fastness is possible. These dyes were particularly useful for dyeing Orlon Type-41 rawstock and, to a lesser extent, Type-42 rawstock. At the present time their use is mainly limited to the rawstock dyeing of heavy shades, such as blacks, dark browns and navies, where extremely good light fastness in the order of 100-300 hours is desired with a minimum of dye cost. A procedure for the high-temperature dyeing of Orlon rawstock with selected vat dyes that give good to excellent light fastness and excellent wet fastness in a full range of shades has also been published *(5)*.

By far the greatest advance in the dyeing of Orlon has been made by the use of basic, or cationic, dyes. Certainly, it is this class which offers the greatest potential for dyeing Orlon acrylic fiber in the future. These dyes are applied by a direct procedure to obtain bright shades with wet fastness equal to that of the best vat dyes on cotton and good to excellent light fastness.

DYEING ORLON

DYES——Cation-active dyes for Orlon (more simply called *cationic* dyes) will be reviewed briefly. As a word of explanation, the term *cationic* dye has been proposed *(5)* in place of *basic* dye to identify those dyes that have a colorless anion. All of the newly developed Sevron dyes, as well as most of the old basic dyes, fall into this classification; however, dyes such as Chrysoidine and Bismark Brown, which dye Orlon rather as disperse dyes, do not behave toward Orlon like most basic dyes.

Three old cationic dyes,

Du Pont Fuchsine Conc,
Du Pont Brilliant Green Crystals and
Du Pont Victoria Green Small Crystals,

are the base colors used at the present for navies and blacks. While their light fastness is poor as self-shades, in combinations for heavy shades the light fastness is increased to the 40- to 80-hour range. These dyes supplement the newly developed Sevron dyes for Orlon. The following were the first Sevron dyes developed:

Sevron Yellow L,
Sevron Brilliant Red 4G,
Sevron Blue B and
Sevron Green B.

More recently, this list has been extended with

Sevron Yellow R,
Sevron Orange L,
Sevron Red L and
Sevron Blue 2G.

Sevron Yellow R is redder in shade than Sevron Yellow L and is particularly useful for heavy shades. The latter three dyes form a nucleus of light-fast colors and, supplemented with Sevron Blue B, are the base for tans and grays which will, in most cases, satisfy men's-wear fastness requirements.

DYEING CONDITIONS——As might be expected in any early development, not all of these dyes have exactly the same stability or dyeing requirements, and it is desired here to summarize their optimum dyebath pH conditions. These dyes are classified in three groups:

I. Those which *must* be dyed in an acid bath with optimum pH 4.0-5.5;
II. Those which may be dyed in either an acid or in a neutral bath (pH 4 to 8); and
III. Those which may be dyed in a weakly acid or a neutral bath with optimum pH 5 to 8.

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* Presented by R A Clarke at the Bismarck Hotel in Chicago on Feb 12, 1955.

NOTE: Capracyl, Orlon, Pontachrome and Pontamine are registered trade-marks of, and Sevron is a trade-mark of, E I du Pont de Nemours & Co, Inc, Wilmington 99, Del.

TABLE I

DYEING REQUIREMENTS OF CATIONIC DYES FOR ORLON ACRYLIC FIBER

I) *Acid Bath* (pH 4.0-5.5)
Sevron Yellow L
Sevron Yellow R
Sevron Brilliant Red 4G
Sevron Green B
Du Pont Fuchsine Conc
Du Pont Brilliant Green Crystals
Du Pont Victoria Green Small Crystals

II) *Acid or Neutral Bath* (pH 4-8)
Sevron Blue B
Sevron Blue 2G
Sevron Brilliant Red 4G

III) *Weakly Acid or Neutral Bath* (pH 5-8)
Sevron Orange L
Sevron Red L

TABLE II

MEN'S WEAR SHADES

	Light Gray	*Dark Gray*	*Tan*	*Dark Brown*
	% owf	*% owf*	*% owf*	*% owf*
Sevron Orange L	0.06	0.24	0.30	2.0
Sevron Red L	0.024	0.08	0.02	—
Sevron Brilliant Red 4G	—	—	—	0.5
Sevron Blue 2G	0.40	2.0	0.50	—
Sevron Green B	—	—	—	1.4
Light (Fade-Ometer) rating	4-5	5-6	4-5	6

	Navy	*Black*
	% owf	*% owf*
Du Pont Victoria Green Small Crystals	0.8	0.8
Du Pont Fuchsine Conc	0.36	0.34
Sevron Yellow R	0.60	1.0
Sevron Orange L	—	1.7
Light (Fade-Ometer) rating	5	5-6

Dyes in Group I gradually decompose or give weaker shades when the dyebath pH is above 5.5. The rate of decomposition varies with the dyes in this group. Thus, Sevron Yellow L and Sevron Yellow R decompose so readily at pH 6 and above that in practice at this pH shade control would be very difficult. Sevron Green B changes to a colorless structure at about pH 6 and must be used in an acid bath to dye properly. Sevron Brilliant Red 4G, preferably applied from an acid bath, is also useful under neutral conditions, though it gives a somewhat weaker shade than under acid conditions.

The dyes in Group II are applied satisfactorily over a rather wide range of pH conditions.

For optimum shade reproducibility, Sevron Orange L and Sevron Red L in Group III are preferably applied from a weakly acid or neutral dyebath. In light shades, when too much acid is used, Sevron Orange L dyes appreciably redder in shade, and Sevron Red L dyes appreciably bluer and brighter. When these dyes are used for obtaining *light* tertiary *shades,* such as tans and grays, the recommended dyebath pH condition should be followed in order to obtain consistent shades. However, when these colors are used in *heavy shades,* such as in deep reds, dark browns or blacks, no shade sensitivity to pH is observed, and thus, in heavy shades, these dyes can be used under the acid as well as under the neutral conditions of the Group II dyes.

Sevron Orange L and Sevron Red L with Sevron Blue B and Sevron Blue 2G form a nucleus of stable cationic colors for Orlon acrylic fiber. Research effort is being directed toward expanding this group of dyes having good stability over a wide pH range.

It should be pointed out that, while the dyes have been segregated into groups with compatible dyeing properties, all of these dyes can be used very satisfactorily in combination with each other if a dyebath pH of about 5 ± 0.5 is used. In practice, this does not appear difficult to achieve. While the amount of acetic acid required to obtain a dyebath pH of 5 may vary from one location to another, depending upon water conditions, a consistent pH of 5 ± 0.2 has been obtained in dyeing 100% Orlon acrylic fiber at a 1:30 volume ratio in the presence of 0.5% glacial acetic acid and 0.5% sodium acetate owf (on wt of fiber). In dyeing blends of Orlon and wool, the buffering action of wool established a pH close to 5 in the presence of 1.0% glacial acetic acid owf.

FASTNESS PROPERTIES OF SUITING SHADES———It is well known that the cationic dyes will provide a wide range of *bright* shades on Orlon with good fastness properties. With the development of the newer Sevron dyes, a full range of suiting shades can now be obtained which have light fastness adequate in most cases for men's wear. As previously pointed out, the wet fastness of cationic dyes on Orlon is excellent. Typical formulations for men's-wear shades appear in Table II.

It will be noted that combinations of

Sevron Orange L,
Sevron Red L and
Sevron Blue 2G

were used in all of the light shades. Sevron Orange L was also used as the base color in the dark-brown shade with Sevron Green B as the blue component to give optimum light fastness. As indicated previously, Du Pont Victoria Green Small Crystals and Du Pont Fuchsine Conc are useful, as well as being very economical, base colors for navies and blacks. In dyeing blends of Orlon acrylic fiber with wool, Sevron Brilliant Red 4G can be substituted advantageously for Du Pont Fuchsine Conc to reduce wool stain. Not only are more pleasing deeper black shades obtained by incorporating Sevron Orange L in black formulations in place of a portion of the Sevron Yellow R used in previous formulations, but, in addition, the total color cost for the black is reduced.

The light fastness of the tan and light-gray shades was only 20 to 40 hours. While the new color combinations give improved light fastness over previous formulations with

Sevron Yellow L,
Sevron Brilliant Red 4G and
Sevron Blue B,

these results are not so good as expected from the light fastness of the new colors as self-shades. While research effort is directed to develop dyes that will give improved Fade-Ometer fastness, it has now been demonstrated, with the tan shade in particular, that the reddening of shade observed after 20 hours' Fade-Ometer exposure is due to the sensitivity of the Sevron Orange L, the base color in the tan, to pH changes and not to loss in strength, and that the original shade is returned by laundering. Florida sunlight under glass also caused the tan shade to become redder after 20 hours' exposure, although the change was not so pronounced as that obtained in the Fade-Ometer. The fiber itself apparently becomes more acidic on exposure to light and to heat in the Fade-Ometer, and this causes the Sevron Orange L to change to its redder acid shade. This prototropic property of Sevron Orange L was pointed out earlier. When the tan was subjected to alternate 20-hour Fade-Ometer exposures and AATCC No. 3 Wash Tests for a total of 80 Fade-Ometer hours and four wash tests, the shade became only a trace weaker. This shade recovery after laundering is important, since several mills are introducing suiting fabrics composed of Orlon acrylic fiber and rayon or cotton, which will be designated for the wash-and-wear trade. A tan shade on such a fabric that will be occasionally laundered can thus be considered to have excellent light fastness.

With the development of these new Sevron dyes, it is therefore now possible to obtain, in most cases, shades on Orlon that will have light fastness and other fastness properties adequate for men's suitings.

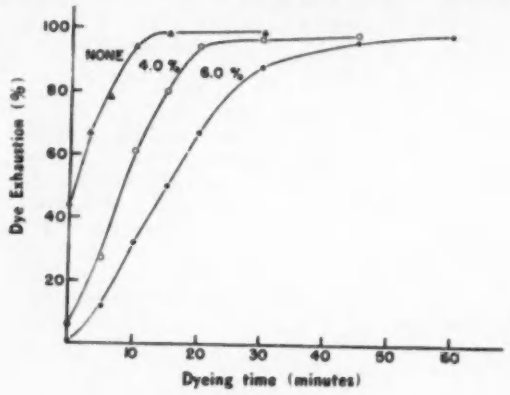

Figure 1
Dyeing rate——0.25% Sevron Brill Red 4G using Du Pont Retarder LAN (Temp, 212°F)

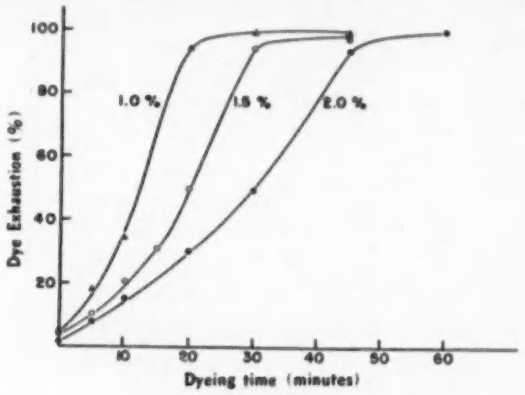

Figure 2
Dyeing rate——0.25% Sevron Brill Red 4G using Du Pont Retarder DS

USE OF RETARDING AGENTS——Du Pont Retarder LAN textile-processing agent has been recommended previously for controlling dyeing rate to obtain levelness of shade. This retarding agent is a colorless cationic material, which retards dyeing by competing with dye. In Figure 1 are shown dyeing-rate curves of 0.25% dyeings of Sevron Brilliant Red 4G on Orlon. Percent of dye exhausted from the bath was plotted versus dyeing time at the boil. These data were obtained by removing samples of the dye liquor from the dyebath at various times during the course of the dyeing and determining the dye concentrations by spectrophotometric comparison with the starting concentration. In the absence of retarding agent, over 40 percent of the dye was exhausted in the few minutes required to raise the bath to the boil, and essentially complete exhaustion was obtained in ten minutes at the boil. The other two curves show the slower rates of exhaustion obtained by using, respectively, 4.0 and 6.0% Du Pont Retarder LAN owf.

It is obvious that levelness, particularly in piece-goods dyeing, would be very difficult to control without the use of a dye-retarding agent. With the retarding agent, little dyeing occurs until temperatures close to the boil are obtained. Thus, unlevelness due to bath-temperature differences is avoided while the beck is being heated to the boil.

In an attempt to simplify the use of the retarding agent and also to decrease the cost of this auxiliary in Orlon-acrylic-fiber dyeing, a new retarding agent is being introduced for Orlon and is designated Du Pont Retarder DS. As seen in Figure 2, again showing dyeing rates of 0.25% Sevron Brilliant Red 4G, much lower amounts of this retarding agent will effectively control Orlon dyeing and permit good levelness to be obtained. At 212°F, the use of 1.0, 1.5 and 2.0 percent of this retarding agent gives 50-percent exhaustion of dye in approximately 10, 20 and 30 minutes, and essentially complete exhaustion in 20, 30 and 45 minutes, respectively. This agent is particularly effective during the initial stages of the dyeing operation when the dye concentration in the bath is highest.

The recommended amounts of this retarding agent for dyeing Orlon are as follows:

% Sevron dye	% Du Pont Retarder DS
<0.1	2.0
0.1-1.0	1.5-1.0
1.0-3.0	1.0-0.5
>3.0	none

Two percent of this retarding agent should be the maximum required even for pastel shades. In dyeings with 0.1 to 1.0% dye, 1.5% Du Pont Retarder DS should be effective, and, for medium shades, 0.5 to 1.0 percent should give good levelness. No retarding agent is necessary for heavy shades.

Curves showing the use of 1.5% Du Pont Retarder DS in dyeing 0.1, 0.25, 0.5 and 1.0% Sevron Brilliant Red 4G on 100% Orlon acrylic fiber are shown in Figure 3. The dyeing rates for 0.1 to 0.5% dye were very close, while that with 1.0% dye was noticeably slower, but satisfactory exhaustion was still obtained in 45 minutes.

When additions of color are made for shade correction, particularly of light shades, it is recommended that further additions of 0.25 to 0.5% Du Pont Retarder DS also be made to insure that the color added will dye levelly.

DYEING TEMPERATURE ——— To dye Orlon most satisfactorily, temperatures as close to the boil as possible at atmospheric pressure or up to 230°F in pressurized equipment have been recommended. The effect of temperature on the rate of exhaustion of cationic dyes on 100% Orlon is seen in Figure 4, where 0.25% Sevron Brilliant Red 4G was dyed at 212°F and also at 209°F in the presence of 6.0% Du Pont Retarder LAN textile-processing agent. A similar set of curves is shown in Figure 5 for 1.5% Du Pont Retarder DS. In each case, the 3°F reduction in dyeing temperature markedly reduces the rate of color exhaustion. The results are summarized in Table III.

In dyeing heavy shades of Orlon, which require two to three hours even at 212°F, it is particularly desirable to maintain the temperature at a good boil to avoid prolonged dyeing times.

When Orlon acrylic fiber is dyed with cationic dyes in blends with wool, rayon or cotton, the initial stain of the cationic dyes on the wool or the cellulosic fibers

TABLE III

EFFECT OF TEMPERATURE ON DYEING RATE
0.25% SEVRON BRILLIANT RED 4G

	Time required, minutes			
	6.0% Du Pont Retarder LAN		1.5% Du Pont Retarder DS	
	212°F	209°F	212°F	209°F
50% exhaustion	15	22	20	38
90% exhaustion	32	60	30	60

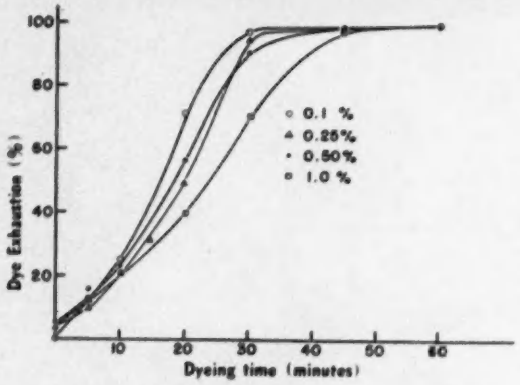

Figure 3
Dyeing rate varying concentrations of Sevron Brill Red 4G (0.1% to 1.0%) using 1.5% Du Pont Retarder DS

can be greatly reduced and frequently eliminated entirely by dyeing at a full boil, while, at lower dyeing temperatures, the wool or cellulosic fibers frequently remain stained.

Satisfactory dyeing at the boil of piece goods containing Orlon is accomplished by using closed becks equipped with overhead steam and frequently auxiliary steam coils in the front or back of the beck. Pressurized equipment for dyeing raw stock or yarn permits dyeing temperatures above the boil and thus reduces dyeing time, particularly for deep shades, and gives optimum wet fastness.

STRIPPING AND LEVELING CATIONIC DYES ON ORLON——There has been a definite need in the trade for a means of partially stripping and leveling cationic dyes on Orlon acrylic fiber. The use of dye-retarding agents, such as Du Pont Retarder LAN or the new retarder, Du Pont Retarder DS, will give good levelness when used in proper quantities. However, there will always be a need for a means of salvaging goods because of human errors or mechanical failures and a means for correcting dyeings which may come up too strong or off shade. The present method for stripping 100% Orlon Type 42 with sodium chlorite or more recently sodium hypochlorite and nitric acid is not applicable to blends of Orlon with wool.

It now has been found that the use of a relatively high concentration of a salt, such as Glauber's salt, or an anionic surfactant will partially strip and level cationic dyes on Orlon acrylic fiber. The following formulation is applicable for correcting slightly streaky or shaded dyeings or for reducing the strength of dyeings which have been over-shot. The material is reworked at the boil for one to two hours in a bath containing, owf,

15.0% anhydrous sodium sulfate, Na_2SO_4,
1.0% Capracyl Leveling Salt,
0.5% Du Pont Retarder DS and
0.5% acetic acid, glacial.

This system is useful on material of 100% Orlon as well as on blends of Orlon acrylic fiber with wool or cellulosic fibers. It proved particularly satisfactory in leveling a four-piece gray dyeing of 55% Orlon and 45% wool that was slightly shaded. It was also used to level a streaky dyeing of a navy shade on two pieces of fabric containing a 50:50 blend of Orlon and wool.

The anionic surfactant, Compound No. 8S, appears to be more effective than Glauber's salt for the partial stripping of cationic dyes from Orlon. The use of a fiber-swelling agent, such as one of the phenylphenols, with Compound No. 8S facilities stripping and promotes leveling.

10.0% Compound No. 8S and
10.0% Dowicide A (sodium salt of orthophenylphenol),

A formulation using acidified to a pH of 4 to 7 with acetic acid, was found to be particularly effective.

The potential usefulness of this formulation has been checked in the laboratory in various ways. As an example, an unlevel gray dyeing was treated for one hour at the boil in a bath containing the above formulation to obtain a lighter gray shade with much improved levelness. This dyeing was then overdyed to a darker gray shade having satisfactory levelness.

As another example, a portion of a deep red dyeing made with Sevron Brilliant Red 4G was treated in the stripping bath at pH 4.5 for one hour in the

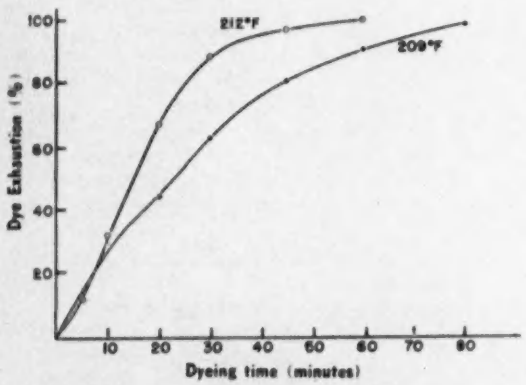

Figure 4
Effect of temperature on dyeing rate——0.25% Sevron Brill Red 4G using 6.0% Du Pont Retarder LAN (Temp, 212°F and 209°F)

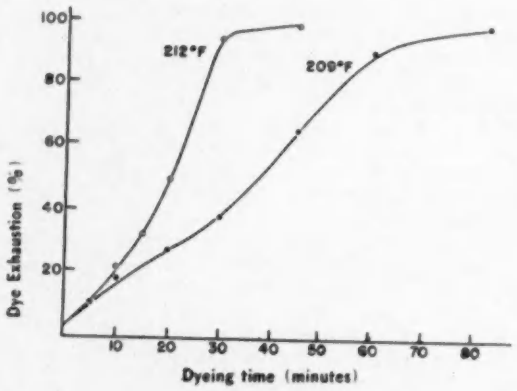

Figure 5
Effect of temperature on dyeing rate——0.25% Sevron Brill Red 4G using 1.5% Du Pont Retarder DS (Temp, 212°F and 209°F)

presence of a piece of undyed white Orlon acrylic fiber. Approximately 50 percent of the color was stripped from the original dyeing and the previously undyed Orlon was dyed approximately 75 percent as strong as the stripped piece, indicating efficient transfer of color by this technique.

It is anticipated that the first technique using Glauber's salt will find greater use than the latter method using Compound No. 8S, since, in general, pieces requiring salvaging are only slightly shaded or unlevel. Where gross unlevelness is encountered and a greater degree of stripping is required, preparatory to redyeing to a heavy shade, the latter method using Compound No. 8S and Dowicide A will be useful. It should be pointed out that overdyeing to heavy shades is facilitated, particularly with the latter stripping technique, since *cationic retarding agents,* frequently used in the initial dyeing, *are also partially stripped from the Orlon,* thus permitting a greater build-up of dye in the fiber. While every unsatisfactory dyeing is a problem within itself, these techniques should prove very helpful to the dyer for salvaging off-quality goods containing Orlon.

SIMULTANEOUS DYEING OF ORLON AND WOOL——To reduce the dyeing time for blends of Orlon and wool, work was directed toward developing procedures for dyeing both fibers simultaneously. While a wide selection of colors for the wool is available, emphasis was directed to wool dyes with superior fastness properties, such as neutral-dyeing acid, milling or chrome dyes. Of particular importance in this connection are the premetalized neutral-dyeing Capracyl dyes, a Du Pont innovation.

The procedure outlined in Table IV for the *simultaneous* dyeing of selected acid colors on the wool and cationic dyes for Orlon acrylic fiber is similar to a previously recommended *one-bath, two-step* procedure *(3).* In the previous procedure, wool colors and Capracyl Leveling Salt were introduced to the bath and essentially exhausted with acetic acid by dyeing 30 to 60 minutes at 190-205°F. The bath was cooled to 190°F, and the cationic colors then were added and dyed at the boil.

It has been found that many acid and cationic dyes can be mixed at 180-190°F without precipitation in the procedure outlined in Table IV so that both fibers can be dyed at one time. The use of Capracyl Leveling Salt aids in preventing precipitation; however, precipitation does occur occasionally, and colors must be selected to avoid this.

The development of a greater number of new Sevron dyes that are stable to neutral-dyeing conditions (Groups II and III discussed above) permits these stable colors to be added to an essentially neutral dyebath necessary for the level application of milling or neutral-dyeing acid colors, as well as some chrome colors. When it is desired to use the cationic dyes of Group I, which are not stable in a neutral dyebath, their addition must be delayed until the pH of the dyebath has been lowered with acetic acid to a value of 6 or below. It is of course essential, particularly in dyeing contrasting bright shades, that there be little or no staining of Orlon acrylic fiber by the wool dyes and that the cationic dyes not stain the wool. Acetic acid is added toward the end of the dyeing cycle to drop the dyebath pH to 4.5-5.0 so as to transfer the cationic dye stain from the wool to the Orlon acrylic fiber.

Examples of satisfactory cross-dyeings and union dyeings on a fabric made of a 55:45 blend of Orlon and wool were carried out by the procedure outlined in Table IV. Formulations in which the percentages are based on total weight of fiber follow:

TABLE IV

PROCEDURE FOR THE SIMULTANEOUS DYEING OF ORLON AND WOOL WITH CATIONIC DYES AND SELECTED ACID DYES

Prescour to neutralize wool for 15 minutes at 160°F with
1.0% Capracyl Leveling Salt and
1.0% trisodium phosphate.
Set fresh bath at 140°F with
0.5 to 1.0% Capracyl Leveling Salt,
1.0% monosodium phosphate and
—% acid dyes.
Raise temperature to 180°F.
Add
—% dye-retarding agent (if necessary) and
—% cationic dyes.
Dye at boil.
Exhaust acid dyes with acetic acid.

1) **Wool, Red; Orlon, Gray**
- 1.0% Du Pont Milling Red SWB Conc 125%
- 0.12% Sevron Orange L
- 0.04% Sevron Red L
- 1.0% Sevron Blue 2G
- 0.25% Du Pont Retarder DS

2) **Wool, Red; Orlon, Blue**
- 0.5% Pontamine Fast Pink BL Conc 125%
- 0.5% Sevron Blue B
- 0.5% Du Pont Retarder DS

3) **Wool, Green; Orlon, Orange**
- 0.5% Du Pont Anthraquinone Green GNN
- 1.0% Sevron Orange L

4) **Wool, Gray; Orlon, Red**
- 1.0% Pontachrome Fast Gray L
- 2.0% Sevron Brilliant Red 4G

5) **Wool, Brown; Orlon, Red**
- 0.25% Pontachrome Brown HN Conc
- 0.75% Pontachrome Brown PGN
- 1.0% Sevron Red L
- 0.5% Sevron Orange L

6) **Wool, Brown; Orlon, Brown**
- 0.25% Pontachrome Brown HN Conc
- 0.75% Pontachrome Brown PGN
- 0.85% Sevron Orange L
- 0.25% Sevron Brilliant Red 4G
- 0.35% Sevron Green B
- 1.0% Sevron Blue 2G

7) **Wool, Navy; Orlon, Red**
- 1.0% Pontachrome Blue Black RM Conc
- 1.0% Sevron Brilliant Red 4G
- 0.5% Du Pont Retarder DS

8) **Wool, Black; Orlon, Gray**
- 3.0% Pontachrome Blue Black RM Conc
- 0.09% Sevron Orange L
- 0.036% Sevron Red L
- 0.6% Sevron Blue 2G
- 0.5% Du Pont Retarder DS

In dyeings No. 5 to 8, chroming was carried out at the boil in the same bath by the top-chrome method.

It has also been demonstrated that Capracyl dyes, with the exception of Capracyl Blue G, Capracyl Brown RD and Capracyl Black N, can be applied simultaneously with the hydrolytically stable cationic dyes (Group II and III dyes). The procedure is outlined in Table V.

In this procedure, after the fabric is first scoured and the wool is neutralized, the bath is set with Capracyl Leveling Salt and monosodium phosphate, and then with the cationic dyes. The temperature is then raised to the boil, and the Capracyl dyes are added in accordance with a previously recommended procedure *(6)* for the dyeing of wool with Capracyl dyes in the presence of Capracyl Leveling Salt. This combination of selected stable cationic dyes and Capracyl dyes provides a simple procedure, particularly applicable for light to medium shades, which will give shades with superior all-around fastness properties. Examples of cross-dye and union shades follow.

TABLE V

PROCEDURE FOR SIMULTANEOUS DYEING OF ORLON AND WOOL WITH CATIONIC AND CAPRACYL DYES

Prescour fabric as in Table IV.
Set fresh bath at 140°F with
1.0% Capracyl Leveling Salt,
1.0% monosodium phosphate,
—% Du Pont Retarder DS and
—% cationic dyes.
Raise temperature to boil and add
—% Capracyl dyes.
Dye at the boil for one to two hours. Toward the end of the dyeing cycle add acetic acid to pH 5 to reduce cationic dye stain on the wool and to exhaust the Capracyl dyes. Color adds for shade correction are made after cooling to 180°F.

1) **Wool, Gray; Orlon, Pink**
- 0.3% Sevron Brilliant Red 4G
- 0.06% Sevron Blue B
- 1.0% Du Pont Retarder DS
- 0.25% Capracyl Gray GN

(Concluded on Page P640)

Philadelphia Section

DYEING AND FINISHING RAYON TUFTED CARPETS*

JACKSON A WOODRUFF

American Viscose Corporation
Marcus Hook, Penn

The growth of the tufted-carpet industry within the past three years to a yearly consumption of more than 50,000,000 lb of rayon alone indicates the present importance of the piece dyeing of carpeting. Dyeing is conducted at a volume ratio of 1:10 to 1:15 in large dyebecks holding about 1500 lb of carpeting, including perhaps 900 lb of tufted rayon pile. Selected direct dyestuffs are mostly employed for this work.

The author discusses the problems of attaining levelness in dyeing and especially the avoidance of streaks and side-to-center unevenness. Three procedures for dyeing are suggested, as well as improvements in pumping and machine arrangements. A list of dyes that minimize streaks is offered. The avoidance of color migration in drying and the formation of discoloration products from the backing of the carpeting are touched upon.

INTRODUCTION

ONE of the most active as well as one of the larger segments of the dyeing and finishing trade is found in the field of tufted carpets. This is today primarily viscose-rayon tufting on jute or cotton backing fabric. During the past year, the consumption of rayon for this end use was in excess of 50,000,000 pounds. The facts are that this fiber has achieved this demand because it can be tailor-made to provide a wool-like stiffness and appearance through the proper selection of denier and crimp. It can be cut to any length of staple to suit any yarn-spinning system. It can be made lustrous or dull as desired. It can be made to have soil-resistance characteristics similar to those of wool. It is easy to spin and easy to tuft. Finally, the price of the rayon staple places the cost of these floor coverings at approximately one half that of a woven wool carpet having equivalent luxury appeal. These statements are not intended as a sales talk but rather as a listing of reasons why the consumption of rayon carpet staple has risen from practically zero to over the 50,000,000-pound figure in a period of about three years.

Naturally, with all this growth there have been problems, a great many of which have come from the desire to piece-dye this type of floor covering. In spite of all the accumulated knowledge on the application of direct dyes to piece goods, it has been found necessary to develop new concepts of piece-dyeing carpets because of the problems brought about by the unusual size, weight, and shape of wide tufted carpets.

A rayon tufted carpet of good quality will weigh 4.0 to 5.0 pounds/square yard. A normal load on a dyebeck will be 75-150 yards long and 3-6 yards wide. As 12-foot and 15-foot carpets are very popular, a typical load of carpeting in a dyebeck having an effective width of 14-feet will weigh 1440 lb if the carpeting is 4 yards wide and 90 yards long and weighs 4 lb per square yard. Of this weight, approximately 0.75 pounds/square yard will be rubber backing and 0.75 pounds will be backing material. This leaves an approximate rayon-pile weight of 2.5 pounds/square yard, or 900 pounds total. In this assumed dyebeck there will be approximately 9,200 pounds to 13,000 pounds of water, or the dyebeck will have an approximate volume ratio of 1:10 to 1:15.

In most mills the goods will have been rubberized before dyeing. The application technique of rubberizing is not to be treated in this paper; however, rubberizing before or after dyeing appears to be dependent upon the equipment at hand and on the rug construction. It is somewhat easier to dye correctly without the rubber being present.

DYE APPLICATION

The following different procedures of dye application are in use successfully:

Procedure 1: Wet out in a detergent and a water softener with or without added alkali, such as tetrasodium pyrophosphate, at 90 to 100°F. Add dye and raise to 200°F in 30-40 minutes and run 10 minutes at that temperature. Add common salt in three to four graduated additions with the first add approximately 0.75% on the weight of rayon pile. Run 10 minutes after each add. Run 10 extra minutes and then sample. Cool to 160°F by adding cold water before making any dye adds. Drop and rinse. Add finish or aftertreating materials, run twenty minutes and drop.

Procedure 2: Wet out the goods in a detergent and a water softener with or without added alkali as in Proced 1, except that a selected concentration of salt is also included. Add the dye slowly and run 5 minutes at 90 to 100°F. Raise the temperature to 200°F in 45 to 50 minutes. Run 30 minutes at this temperature and sample. Continue as in Proced 1.

Procedure 3: Bring the bath to 200°F, and add the detergent, water softener, and tetrasodium pyrophosphate. Shut off the steam and wet out the goods. Add the dye slowly and run for 10 minutes. Bring the temperature to 200°F and run 15 minutes. Add the salt as in Proced 1 and continue as in Proced 1.

Any one of these three procedures will work, provided care is used at the higher temperatures to add the salt gradually and to select dyes which fit these different routines. Our own order of recommendation with respect to procedure is 3, 2, and 1, with the highest recommendation for Procedure 3. It will be recognized that these different procedures are designed for

1) Salt-sensitive dyes, the exhaustion of which can be controlled by graduated additions of salt. Sufficient salt is present in the commercial dye to cause considerable exhaustion in the low-volume-ratio baths without the addition of any added salt.
2) Those dyes which are temperature sensitive and which are not helped particularly in diffusion by higher temperatures.
3) Those dyes which exhaust fairly well without salt and which migrate freely at high temperatures.

Now that these procedures and dyes are neatly catalogued, it is necessary to say that almost every dye combination is a compromise. You must therefore not be surprised if the procedure that works best should turn out to be other than the one first selected.

By laboratory dyeings it has been determined here that, at a 1:12 volume ratio, the degree of exhaustion of many dyes on rayon carpet staple is at least twice that on the same goods at a 1:40 volume ratio. It is therefore easy to see how a formula could give good results with the 1:40 volume ratio and yet give very poor results with the 1:12 volume ratio because of the increased exhaustion of dye in the latter case.

In order to learn more about the exhaustion of dye in Procedure 2, samples of dye liquor were taken from actual

* Presented at Kugler's Restaurant in Philadelphia on Friday evening, April 15, 1955.

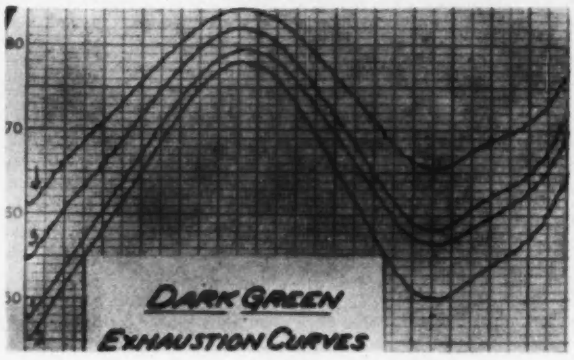

Figure 1

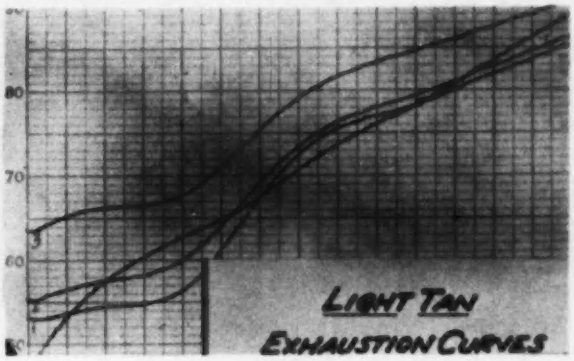

Figure 2

dyeings in commercial application. These samples were taken at the following points in the procedure:

1) five minutes after adding the dye and running at 90°F.
2) after the temperature had been raised to 135°F.
3) after the temperature had reached 190°F.
4) after 15 minutes at 200°F.

On a dark green shade (Figure 1) it was most interesting to see that the degree of exhaustion as shown by spectrophotometric curves on the #1 sample was approximately one half of the total exhaustion; #2 showed a slight reduction in exhaustion; #3 showed a greater exhaustion than #1 and #4 showed approximately 35% more exhaustion than #1.

It is quite possible that this early exhaustion followed by a partial return to the bath contributes to level dyeing. It is also possible that some experimental error accounted for this difference, although it was common to four tests.

A light shade was run in the same manner, and again the first samples showed about 50% of the total exhaustion of the dye (Figure 2). The concentration of total dye originally in this bath was less than one tenth that of the dark green, and this caused an interesting complication. As the dyeing progressed, this beige dyebath appeared to become darker rather than lighter. Apparently, there was a bleed-off of colored matter from the jute back causing this color change in the weak dyebath.

In both cases, in spite of this very rapid exhaustion of the dye in the cold water, the dyeings were judged commercially level.

SHADING———So, you have tried all these approaches and have still had side-to-center shading. Yes, this has been a problem and still will be whenever a combination of circumstances bring it about. What causes it? Primarily, it is the failure to contact all parts of the fabric with an equal exposure to dye liquor of equal concentration and temperature. If these conditions are met, then all exhaustion rates and degrees of exhaustion will be the same all over the carpet. As it is, the solidity of a carpet even without rubber backing prevents the easy flow of dye liquor through the goods, and all dye liquor must run around the edges in order to reach the opposite face. Another influence is the large reservoir of dye liquor which is available to the edges of the fabric but not to the center of the goods. This is especially noticeable in dyeing a 15-foot carpet in a 20-foot-wide beck. Still another contributing factor is uneven temperature, as illustrated by having steam enter into the front of the beck where the temperatures will be 5-20°F hotter at all times than those at the edges and rear of the beck.

Several obvious answers suggest themselves:

I. Improve the circulation of dye liquor by use of an auxiliary pumping system.
II. Take advantage of all means of maintaining high and even temperatures through the beck.

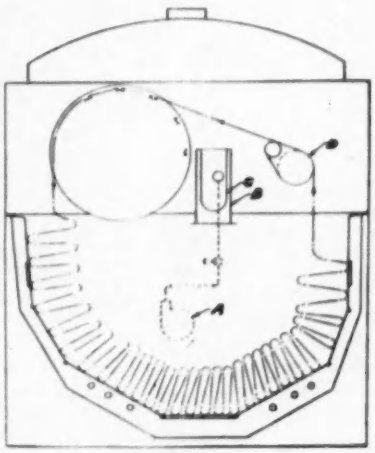

Figure 3
Experimental Dyebeck

III. Improve the method and direction of movement of the fabric in the beck so that improved contact with the liquor will be obtained.

A—Other batch methods.

IV. Use continuous forms of dyeing rather than beck dyeing.
V. Select dyes for levelness characteristics.

I—Circulation———There have been several efforts over the past few years to install pumping systems that would improve circulation of the dye liquor. Figure 3 shows a cross section of an experimental dyebeck.

A indicates the position of the side drains and the pump.
B indicates the feed to the center of the beck.
C indicates the lint-straining sleeve.
D indicates the spreader rolls.

These first efforts usually failed both because of insufficient pump capacity and lint accumulation. Pump capacities of 240 gallons/pump/minute are now available, and usually two of these pumps are connected with the distribution system. The pumps draw from the bottom of the sides of the becks and pump up to a screening tank, where the lint is removed. The liquor is then immediately returned to the geographical center of the machine, for the most part, although some liquor may be by-passed to the front center of the dyebeck. On a twenty-foot beck holding 3000 gallons of water, this provides a complete change of dye liquor in about six minutes. This increase in circulation will aid in producing levelness of dyeing and at the same time will provide the opportunity of saving time in dyeing. In addition, all dye adds and salt adds can be intimately mixed by being fed into the screening tank, thereby giving greater control of exhaustion of the starting dye as well as of the additions.

II—Temperature———This second point considers the proper use of the enclosed dyebeck. These enclosed becks

are supposed to operate closed and not with the door up in the air. It has been claimed that a 20-30% saving in steam can be realized by so doing, and this ought to be a good reason for running closed. It is a fact that, unless proper steam-pipe arrangements are made inside the enclosure, it is not easy to see through the glass. Such steam inserts are easy to make, however. It is a fact that, unless care is taken with venting, a pressure build-up can cause accidents on opening the beck doors. Such a vent is not difficult to install, so there is no reason why the becks cannot be run closed. High temperatures (205-210°F) are very beneficial in promoting diffusion of the dyes. If a circulatory system is used, the enclosing will help to make it easier to hold high temperatures.

III — Fabric Movement ——— This answer is concerned with the movement of fabric in the dyebeck and with the shape of the dyebeck. It is known that there are firms using the rope form of dyeing in an effort to cut down on side-to-center dyeing variations. This approach is much more expensive because of the extreme difficulty of handling the heavy wet carpet in the rope form. It can be said that, as soon as such a firm has the means to dye satisfactorily in open width, then it will very quickly leave the rope system. Assuming now that the open-width form is used, it is easy to see that heavy carpet fabrics are not likely to form supple folds in the beck in falling down from the overhead reel. To feed the cloth properly, the beck should have a scray-like slope giving a similar cross section to that in use at least fifteen years ago for the open-width dyeing of upholstery fabrics. This pitch allows the use of a lower cloth-to-liquor ratio than is possible with the flatter-bottom dyebecks or those which have a large distance from the front to back of the beck. Various ideas of paddles or submerged spreader rolls have been suggested to help insure the proper immersion of the folds each time they pass through the beck. The paddles or rolls can help a great deal with the levelness of dyeing, but they pose a serious problem in affecting the lay of the pile and the shape

A — Batch methods other than beck dyeing are being tried. A laundry-type rotor is in use and operating reasonably well. A Burlington submerged-arm type of machine and a Barotor are both being planned for trial. Either one probably can be made to work in a practical fashion, though it is doubted that either one will displace the beck for wide-width goods. The Burlington machine

TUFTON COLOR FASTNESS

AATCC Wash Test II (120°F)
Rating for Loss of Shade, 5

Light Fastness
Medium and dark shades
40 Fade-Ometer hours
Light shades
20 Fade-Ometer hours

Rubber-Backing Tests (In Development)
Resistance to Aging
Resistance to Washing

Figure 4

offers problems in the size of load which can be accommodated, and the Barotor has serious engineering problems concerned with wide width and with pile disturbances.

IV — Continuous Dyeing ——— Continuous forms of dyeing are very intriguing to think about as they can solve many of the problems of beck dyeing and can make vat dyeing possible. All the methods presently used for the continuous dyeing of flat goods and pile fabrics are being considered for the tufted trade. Padding poses the difficult problem of even extraction of dye liquor over the 18' width; the presence of many rolls in such machines poses the problem of pile lay and tuft fastening; the cost of any of these wide machines will be very high, especially where vat dyeing is to be possible. Along with this high cost there is no guarantee that they will work satisfactorily. Again, it has been the writer's experience that it is a difficult task to line up the production of 1500 yards or higher of the same shade, which would be necessary to make continuous operation worthwhile. It would only be a very large producer of floor covering who could afford to indulge in such new work. Preliminary work on a pad-beck installation with direct dyes has commenced.

V — Dye Selection ——— Throughout this paper it is taken for granted that one will want to use those dyes which will give the best of the following properties:

Light fastness
Color fastness to washing and resistance to staining
Level dyeing
Reasonable cost

This implies that compromise conditions are always existing, as one seldom can find dyes which have all the desired qualities. In regards to side-to-center evenness, some attention must be paid to the spectral distribution of the dyes in a formula. Assume that one has a green shade to match and a blue and a yellow dye are used. If there is the least difference in exhaustion properties, then there are opportunities for unequal exhaustions at the side and center, and this will result in not only a difference in depth but also a change in cast. It makes sense to use dyes as close to the shade to be matched as possible as the changes in cast are far more noticeable than those of depth differences.

The choice of which will be used of the three methods of dye application mentioned earlier in this paper will also influence the choice of dyes.

AVISCO TUFTON REQUIREMENTS ———In discussing dye selection, it is proper that some mention be made of minimum standards of dye fastness for tufted-rayon floor coverings. The Tufton Program of the American Viscose Corporation requires minimum standards of performance. The following apply to dyeing and finishing (Figure 4).

The Tufton Specifications have been chosen as being practical to both the consumer and the piece dyer. Certain shades have difficulty in passing Wash Test II (120°), especially reds and yellows, but emphasis is placed on shade change or loss in depth on washing rather than on the staining of whites. It is not expected that one would wash a deep-red rug along with white underwear, so if there should be a bleed-off from the rug without shade change in the rug, then it would still be considered satisfactory.

Another factor influencing the choice of dyes is the Fade-Ometer exposure test of forty hours for medium and dark shades and twenty hours for light shades. Actually, it has been found that a large portion of the rugs tested to date have been satisfactory to this test. Perhaps some of you will feel that this is too low a minimum standard to be considered as adequately protective to the consumer. The Tufton Program must be realistic and must not set up impossible standards. At the same time, if it is found that higher standards can be met, then the requirements can be raised. As yet there have been very few complaints due to the sunlight fading of rayon rugs. One other fact worth mentioning is that dyes containing copper can be used only in very small amounts because of the destructive effect of copper on the rubber backing. This fact alone cuts out many of the normally used light-fast and wash-fast dyes.

The other tests of interest to the dyeing and finishing trades are those for the rubber-backing material. An accelerated aging test and a washing test are given to determine practical durability of the

backing. There is considerable doubt that the tests are truly representative of actual wear performance, and new test procedures are now being investigated. The help of the AATCC in evolving and evaluating such tests is sincerely invited.

DYEING DIFFICULTIES

STREAKS———During the past few years there have been definite problems of streaks appearing on tufted carpets. There are streaks of varying degree of intensity caused everyday by the variation in yarn sizes, tufting conditions, etc, but these are not particularly the responsibility of the dyer and finisher. He is concerned, however, with those streaks which are caused by the following:

1) Improper selection of tint or additives in the tinting solution.
2) Improper mixtures of rayon staples of differing dye indices.
3) Unintentional mixtures of fibers of different characteristics, such as bright with dull, cotton with rayon, etc.

In regards to tint application, one must be careful that the tint as well as the additives, such as the dispersers used, etc, are going to be immediately removed from all fibers when placed in water. Examples have been seen where the tint stained the nylon in a viscose-nylon blend with resultant streaks. Also, there have been cases where waxy materials have had a resist effect in dyeing, and streaks were obtained which, however, could be removed by scouring, stripping and redyeing.

Point #2 is concerned with the variations in dye index existing between, for instance, lots of staple from two producers, or lots of staple of different code numbers and letters from the same producer. When different dye indices exist, it is often possible to use a dye selection which will greatly minimize this effect. Examples are shown which effectively demonstrate that, by dye selection, a streaky rug can be made commercially saleable by using the proper dyes. For each of the three shades in Figure 5, dyes in the following list selected from 150 were used to dye the A samples of carpet with rayon tufts in bands of varying dye indices, whereas the B samples were dyed with unselected dyes:

Fast Black L, Pr 24
Brown BRLL, Pr 47
Yellow RL, Pr 582
Red 5BL, *CI* 278
Yellow NN, *CI* 814
Chlorantine Fast Green 5GLL
Chlorantine Fast Brown 8 RLL
Fastusol Blue LFFR
Solophenyl Brilliant Blue BL
Pontamine Fast Orange 2GL

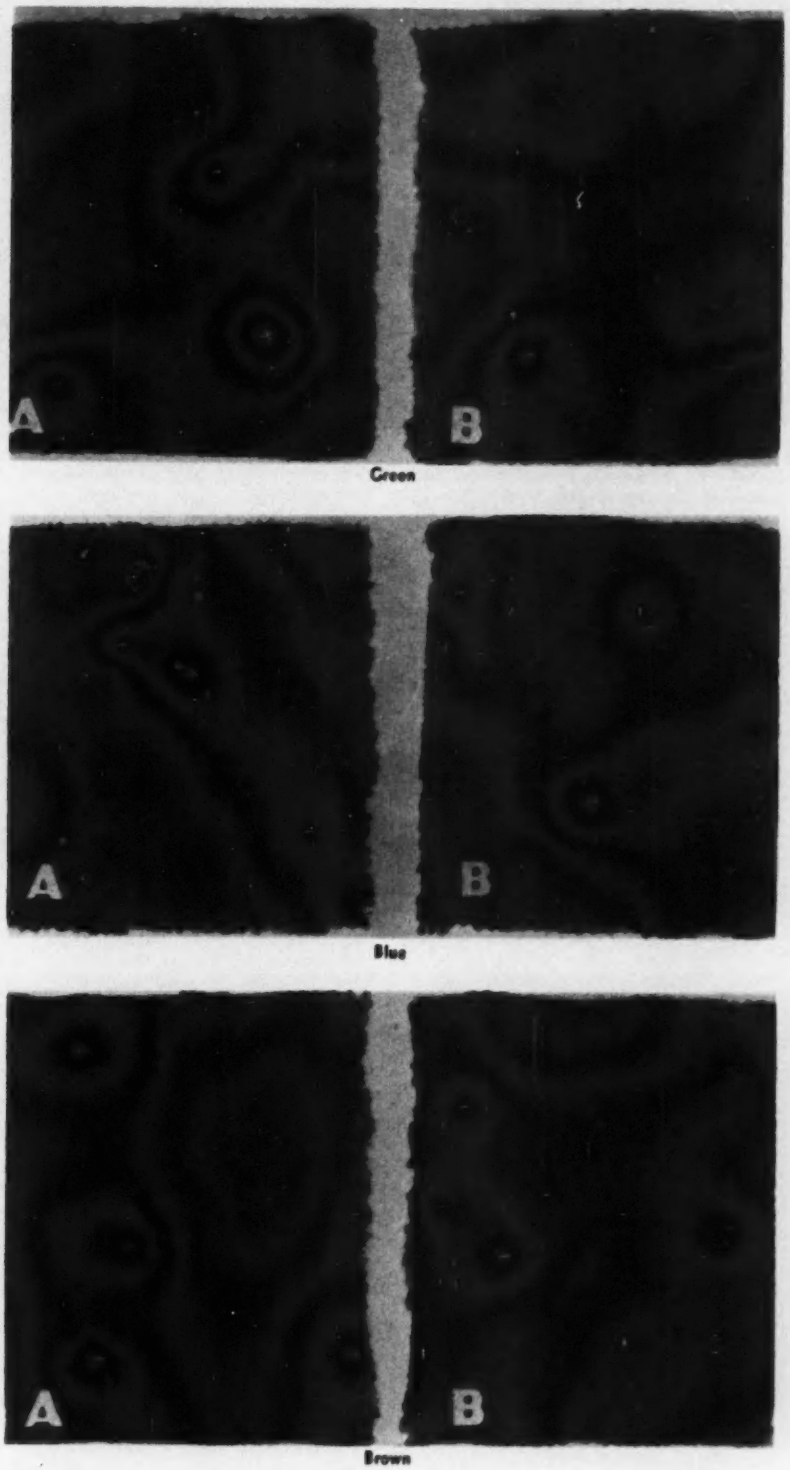

Figure 5

Dyeings on Carpet with Rayon Tufts in Bands of Differing Dye Indices

A—Selected Dyes
B—Unselected Dyes

Not all types of dye-index difference can be eliminated by dye selection. Information as to what type of difference can be corrected will be obtained in future work. It is very interesting to note that cut-pile carpets are extremely sensitive indicators of dye difference. Dye differences that would not be noticeable in a filling band or in single-end knitting are easily detected in a cut carpet pile. Loop-pile carpets are much less sensitive, and streaks of this type are not often encountered in this type of floor covering.

Improper blends can definitely produce streaks, and not much can be done with these in a carpet. Fortunately, in a blend these in a carpet.

DISCOLORATION ——— In tufted carpets and in woven carpets, the backing materials usually contain raw yarns of either cotton, jute, or paper. All cellulose-base raw yarns contain impurities or cellulose degradation products which are yellow brown in color. If these colored materials are not bleached or are not removed by scouring, then they may show up on the face of the rug through migration at wet and dry interfaces. Cellulose dagradation products are also found in rayon carpet staple under certain conditions and occasionally have been the source of discoloration effects along with those appearing from the backing. Several discoloration examples have been seen in stock-dyed tufted carpets. These carpets are normally wet out in order to finish the goods but are not scoured at the time. During drying, discolorations have been found to appear especially on light or bright-colored carpets. This has been traced to the migration of colored impurities from the raw yarns in the backing material.

Concerning those discolorations that have occurred on piece-dyed carpet, it usually seems that there are at least two other contributing factors. The presence of residual alkali in the carpet at the time of drying appears to be a cause of increased discoloration, and there is always the possibility that too much heat has been applied during drying so that scorching of the carpet staple has taken place.

If discoloration is a problem, it is recommended that the backing material for stock-dyed carpets be scoured before tufting. All carpets when dried should be in a neutral or slightly acid condition. Acetic acid, aluminum acetate, or alum is used for this purpose. (It is readily seen that the rubberizing of wet goods may bring up problems of alkaline drying.)

Drying rugs is at best a difficult job to do quickly and properly. Migration of colored materials will not occur if the drying is done in such a manner that no parts of the tufts or carpet are wet while other parts are dry. The greater the differential of moisture between two points, the higher the temperature, and the longer these conditions exist, the worse is the degree of discoloration due to migration. This can be shown by saturating a greige carpet with water and then drying it in an oven while it rests on a smooth, nonconducting surface. This condition will cause drying of the tufts on the tips while the body of the carpet is still saturated, and very bad discoloration effects will be obtained. The same carpet could be wet out and then thoroughly extracted and then dried at the same temperature but with good air circulation and the degree of discoloration would be negligible. Uneven and inefficient extraction can be a contributing cause of discoloration.

ACKNOWLEDGMENTS

The following persons in the Textile Research Department of the American Viscose Corporation contributed to the experimental work and the practical information expressed in this paper:

D P Feyler
L L Walmsley
W S Sollenberger
C A Martin, Slides
F F Morehead, Research and Development Dept

Dyeing of Orlon———

(Concluded from Page P635)

2) **Wool, Red; Orlon, Blue**
1.0% Sevron Blue 2G
0.5% Capracyl Red BB

3) **Wool, Gray; Orlon, Gray**
0.066% Sevron Orange L
0.02% Sevron Red L
0.44% Sevron Blue 2G
0.6% Du Pont Retarder DS
0.22% Capracyl Gray GN
0.02% Capracyl Red B

4) **Wool, Brown; Orlon, Brown**
0.4% Sevron Orange L
0.13% Sevron Red L
0.8% Sevron Blue 2G
0.5% Du Pont Retarder DS
0.8% Capracyl Dark Brown B
0.05% Capracyl Yellow 3RD
0.10% Capracyl Gray GN

For shading purposes, the following neutral-dyeing acid colors may be applied with the Capracyl dyes to facilitate shade formulation and to extend the shade range of the Capracyl dyes:

Pontachrome Brown BGL
Du Pont Anthraquinone Rubine R Conc
Du Pont Anthraquinone Violet RN
Du Pont Anthraquinone Violet 3RN
Du Pont Anthraquinone Milling Blue BL
Du Pont Anthraquinone Green GNN
Du Pont Neutral Gray L

While the procedures outlined above were specifically directed toward the piece-goods dyeing of blends of Orlon acrylic fiber and wool, satisfactory results in preliminary tests have been obtained also on yarn in package machines. In these tests, the pH was lowered by the gradual addition of monosodium acid phosphate and then acetic acid. Union shades of a gray and medium brown were dyed with Capracyl and cationic dyes, and union shades of a dark brown and a black were dyed with chrome dyes for the wool and cationic dyes for the Orlon acrylic fiber. The dyeing time of the deep shades was further reduced by finishing the dyeings at 225°F.

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News of the Trade

• Chemical Finishing Conference to Precede AATCC Convention

The Fourth Annual Chemical Finishing Conference, sponsored by the National Cotton Council, will be held September 20-21 at the Chalfonte-Haddon Hall, Atlantic City, N J, immediately preceding the annual convention of AATCC.

The Chemical Finishing Conference brings together more than 200 representatives of the cotton manufacturing, chemical, and finishing industries for discussions and progress reports on the application of chemistry to cotton.

John H Dillon, director of the Textile Research Institute, Princeton, N J, and last year's recipient of the Harold DeWitt Smith Award, has been named general chairman of the Finishing Conference. Chairmen for the four technical sessions will be Arnold M Sookne, Harris Research Laboratories; Harley Y Jennings, Dan River Mills; Theodore F Cooke, American Cyanamid Co; and Nelson F Getchell, Cotton Council staff.

The complete program for the meeting follows:

Tuesday, September 20

"Progress Report on Cyanoethylation," Jack Compton, Institute of Textile Technology; "One-Step Procedure for Cyanoethylation of Cotton," Arnold H Gruber, American Cyanamid Co; "Physical Properties of Chemically Modified Cottons," James N Grant, USDA Southern Regional Research Laboratory; "A Copper Process for Microbial Protection of Cellulosic Fabrics," Edward Abrams, Southern Research Institute; "Improved Weather Resistance by Acetylating Vat-Dyed Cotton," W Norbert Berard, USDA Southern Regional Research Laboratory; "Electron Microscopic Study of Cotton Soiling," Mary L Rollins, USDA Southern Regional Research Laboratory.

Wednesday, September 21

"The Mechanical Properties of Cellulosic Fabrics Treated with Urea-Formaldehyde Resins," Richard O Steele, Rohm and Haas Co; "The Effect of Aftertreatment with Sodium Bisulfite on Chlorine Retention of Resin-Treated Cottons," John H Howard, Cranston Print Works Co; "Characteristics of Wash and Wear Cottons," Arnold L Lippert, Joseph Bancroft and Sons Co; "Variables of Cure in the Resin Finishing of Cotton," Scott H Foster, Monsanto Chemical Co; "A Theory of Flame-Resistant Finishes," Irvin M Gottlieb, Textile Research Institute; "Recent Developments in Flame-Retardant Treatments for Cotton," J David Reid, USDA Southern Regional Research Laboratory.

• Pfizer to Build Warehouse and Office in Chicago

Chas Pfizer & Co, Inc, Brooklyn, N Y, has announced plans for the construction of a combination warehouse and regional sales office on the western edge of Chicago.

Construction is scheduled to begin immediately on a 4-acre site at 6460 W Cortland Street, a block from Naragansett Avenue. Pfizer, which now occupies warehouse and office space in the Mandel-Lear Building, 425 N Michigan Avenue, expects to be in the new quarters by May 1, 1956.

The two-story structure of modern design will contain 81,000 square feet of warehouse space, part of it air-conditioned for the storage of heat-sensitive chemicals and drugs. Offices, lunch room and conference room, all on the second floor, also will be air-conditioned.

The warehouse will be served directly by the adjacent Milwaukee Road tracks and will have modern truck-loading facilities. Plans call for parking space for employees and visitors.

All four of the Company's domestic divisions will use the warehouse facilities and have regional offices in the new structure.

The Chicago branch will be the fourth combination warehouse and office established in the Company's program to expand its distribution facilities. Other branches are in operation in San Francisco and Atlanta, one is nearing completion in Dallas and another is planned for Portland, Ore.

• Dewey and Almy Doubles Polyvinyl Acetate Facilities

Doubled facilities for producing polyvinyl acetate polymers and copolymers have been announced by the Dewey and Almy Chemical Company, division of W R Grace & Co, Cambridge, Mass.

According to Bruce M Bare, marketing manager — organic chemicals, the doubled production was made necessary by increased demand from manufacturers of textile sizings, adhesives, and paint.

The added polyvinyl acetate production will come from both Cambridge and Acton, Mass, plants.

• Solvay to Construct New Chlorine-Caustic Soda Plant

Solvay Process Division, Allied Chemical & Dye Corporation, will shortly begin construction of a mercury cell chlorine-caustic soda plant on property recently purchased near Brunswick, Ga. The 700-acre site is situated on the Turtle River, north of Brunswick.

In making the announcement, Solvay's president, Carlton Bates, stated that the new Solvay plant is expected to be in production by December 1956.

It is reported that the plant will provide employment for about 125 people and will have capacity to produce 100 tons of chlorine and 125 tons of caustic soda per day. Annual sales value of products to be manufactured in the new plant is expected to be in excess of $4,000,000. Electric power required for operations will be purchased from Georgia Power Company.

The plant will be served by the Southern and Atlantic Coast Line Railroads. Its location on the Turtle River will also enable Solvay to make barge shipments of finished products on the inland waterways north to such consuming points as Savannah, Ga; Beaufort, Charleston, and Georgetown, S C; and south to St Mary's, Ga; Fernandina, Jacksonville and Palatka, Fla.

Construction of the Brunswick plant will be under the supervision of C P Hackett, Solvay's director of development. Engineering work in connection with design of the plant will be carried on by Solvay's own forces.

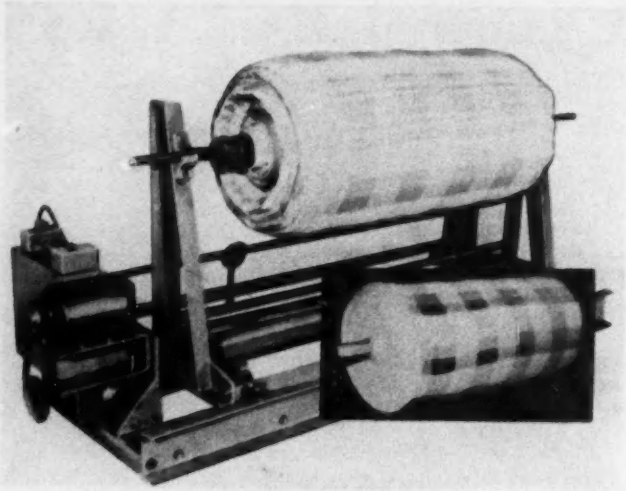
• Spielman Chemical Purchases New Facilities

The Spielman Chemical Sales Co, Inc, a subsidiary of Independent Chemical Corp, Brooklyn, has purchased a new warehouse and bulk storage depot at 79th Place and 71st Ave., Glendale, Queens, N. Y.

According to Benjamin Spielman, president of Independent Chemical, the entire premises with direct railroad sidings and tank storage will facilitate the handling of bulk liquid and dry chemicals for shipments within the metropolitan area.

Independent Chemical Corp markets industrial and specialty chemicals of various domestic and European producers, and serves as metropolitan distributor for Dow Chemical Co's Versene compounds.

• NEW PRODUCTS AND DEVELOPMENTS •



Hermes Automatic Guiding Unit

• Automatic Guiding Unit

Hermas Machine Co, Warburton Ave, Hawthorne, N J, has introduced a newly developed *let-off* guiding unit, designed to provide evenly wound rolls of cloth, paper or plastic batched material, when placed in front of a machine or processing unit.

Operation appears to be relatively simple. When set to the line of the selvage or edge of travel, the sensing device actuates the automatic guiding unit electrically. This in turn moves the carriage to keep the material running straight and smooth.

• Pfizer Offering ADA in Pilot-Plant Quantities

Acetonedicarboxylic acid, a highly reactive chemical, was made available last month for the first time in pilot-plant quantities by Chas Pfizer & Co, Inc.

Designated by the company as ADA, the compound is derived from fermentation-produced citric acid. Described as white crystalline powder of high purity, ADA is expected to be useful industrially for the preparation of dyestuffs, chelating agents, insecticides, fungicides, etc.

ADA represents the seventh in the company's new series of industrial chemicals made or derived from fermentation. Earlier this year, Pfizer introduced itaconic acid, two itaconic esters, two citric acid ester ("Citroflex") plasticizers and kojic acid as part of its stepped-up industrial chemical program.

A comprehensive data sheet and samples are available upon request from the company's Chemical Sales Division, 630 Flushing Avenue, Brooklyn 6, N Y.

• Eastone Fast Pink 3B-GLF

Eastman Chemical Products, Inc, Kingsport, Tenn, has introduced Eastone Fast Pink 3B-GLF, a new pink acetate dye said to possess outstanding fastness to gas, light, sublimation and washing. It is also said to possess exceptional fastness to perspiration and crocking, and to be unaffected by crease-resistant resins.

Eastman Fast Pink 3B-GLF produces a bright bluish-pink on acetate with slightly bluer shades on nylon. It is said to be dischargeable and usable for printing, remaining unaffected by diazotizing and developing. Union and cross dyeing with blends or mixtures of acetate and cotton or viscose are reported possible since the new pink dye stains these latter fibers only slightly.

• CSI Nep Machine

Custom Scientific Instruments, Inc, Kearny, N J, is now offering to the trade the Nep Machine designed by the U S Dept of Agriculture.

This laboratory-type machine has been devised to produce a relatively narrow web of fibers from a small sample of cotton, which is to be evaluated for nep count. The design incorporates the principal mechanical assemblies of textile-carding machines in order to simulate commercial production methods as closely as possible. The machine reportedly will process a 3-gram sample of blended cotton to produce a continuous web 4-inches wide and approximately equivalent in appearance and weight to card web produced for 40-gram sliver. Sufficient web is produced to provide 10 specimens for placement on 4" x 9" boards.

• Cochrane Zeolite Softeners

Engineered and manufactured by Cochrane Corporation, Philadelphia 32, Pa, Cochrane Sodium Zeolite Softeners are designed to eliminate the hardness of water (calcium and magnesium compounds) for use as boiler feedwater in textile plants, laundries, and other industrial applications.

Using the familiar ion-exchange principle with common salt-brine regeneration, Cochrane Zeolite Softeners are said to readily supply water of zero hardness. Various Cochrane Zeolites, including greensand, synthetic gel and styrene resins, can be used in these units.

The patented, pilot-actuated Cochrane Hydromatic single-control Multiport Valve is said to eliminate conventional valve nests. A single control reportedly permits accurate selection of steps of operation and regeneration. The valve design also includes integral automatic backwash and rinse rate-of-flow controllers.

Cochrane Hydromatic Sodium Zeolite Softeners are described in Bulletin 4520-B, available from Cochrane Corp. Smaller Cochrane Zeo-Flo Softeners in capacities up to 160 gpm are covered in Publication 4505-A.

• New Aula Extender Clears

A new line of Extender clears based on starch for oil-in-water emulsion pigment printing, that is said to produce greatly increased color value with excellent resistance to laundering and exceptional low crock properties has been announced by Aula Chemicals, Inc. According to Dr Leslie L Balassa, Vice President of Aula, the starch develops a structure in the print paste which results in superior color value. While corn starch is preferred, other starches have also been employed with excellent results.

Print pastes made with the new extender clears are said to maintain good printing viscosity at high color concentration, giving full color value both in deep shades and in light shades. The new product has a relatively low solvent content and can be prepared easily by all color shops without special equipment. These new extender clears will be released to Aula customers for use with Aulabrite printing colors.

Patent applications have been filed on this new development and complete information may be obtained from Aula Chemicals Inc, 714 Division St, Elizabeth, New Jersey.

NAMES IN THE NEWS

Logue

Wearing arctic clothing for protection against sub-zero temperature, JACK J PRESS, chief of the Textile Branch, Research and Development Div, U S Naval Supply Activities, Brooklyn, N Y, conducts a test in the climatic test chamber to determine the lowest temperature at which a coated fabric can be worn without getting stiff. He is using a test device he developed, the Drape-Flex Stiffness Tester. Mr Press was recently appointed visiting instructor on textile structures at his alma mater, Brooklyn Polytechnic Institute, where he will give a course covering the entire scope of engineering of textile structures beginning this fall.

Lovins

Burr

Giauque

PAUL G LOGUE has joined Wica Chemicals, Inc as manager of the Charlotte firm's Resin Sales Service Dept. His responsibilities will include all resin technical service at Wica as well as the demonstration and selling of resins. His department will develop new resin materials for use in the textile industry.

Mr Logue's previous associations were with National Dye and Printing Co, Hornell Industries, and most recently, Burlington Mills Corp.

FRANCIS K BURR has joined Fabric Research Laboratories, Inc, Dedham, Mass, as a senior staff member. He was formerly in charge of the technical services of the Quality Control Department of Burlington Mills, Greensboro, N C. Previous to his Burlington assignment he was manager of technical service for the Textile Chemical Department of Monsanto Chemical Company.

Mr Burr will be assigned to projects involving the use of mechanical and chemical methods for finishing fabrics and will work with client mills in improving processes and products.

Mr Burr is a member of ACS, AAAS, and AATCC. He has held several offices in the Piedmont Section, AATCC, and was recently elected a Councilor.

MARCEL J PAGERIE, who joined Aquex Development & Sales Corp, Whippany, N J, as manager this past June, has been appointed to the office of vice president and general manager.

He succeeds EVERETT W SWEET, who has resigned from active participation in the affairs of the Company.

GERALD H LOVINS has joined the staff of Photovolt Corp, New York manufacturers of photoelectric and electronic-measuring instruments.

Mr Lovins, who served for 15 years as research director of American Instrument Co, Inc, Silver Spring, Md, will devote most of his time to the development of new products.

ROBERT E GIAUQUE has been named works manager and chief engineer of The E Horton & Son Co, Windsor Locks, Conn.

Mr Giauque, who was formerly with Hamilton Standard Division, United Aircraft Corp as quality coordinator, will be responsible for the operation of the Gabb Special Products and Horton Chuck manufacturing divisions of the company.

Four organizational changes have been made in the Chemical Division of Koppers Company, Inc, Pittsburgh, Pa.

W J REAGAN, formerly assistant plant manager (operations) at the Company's Kobuta Plant, has been appointed organization administrator of the Division's Control Section. He will be replaced at Kobuta by M K DAWSON, who was assistant to the production manager.

Also announced was the assignment of J C FERRARO to the Detroit sales office of the Pittsburgh district. His vacated position of supervisor, Division sales office, will be filled by R F SEUBERT.

GEORGE A CABANISS has joined The Borden Company's Chemical Division as general manager of its Polyco Department plant in Illiopolis, Ill. For the past five years he has been general foreman of the B F Goodrich Chemical Company's synthetic rubber plant at Louisville, Ky. He will replace RICHARD PEASE, present general manager of the plant, who will return to Borden's headquarters Polyco plant at Peabody, Mass.

Major production at Illiopolis includes polyvinyl acetate, butadiene styrene and butadiene acrylonitrile.

Colloids, Inc, has announced the appointment of EDWIN R YOUNG to its technical sales staff. Mr Young will work out of the Newark, N J, office and will cover the Pennsylvania-Virginia-Maryland-Delaware territory, where he will service all warp-sizing, throwing, spinning and dyeing and finishing accounts.

Mr Young's most recent connection was with the Brunswick, Maine, Div of The Verney Corp.

TECHNICAL LITERATURE

(It is understood that the following literature is available from the sources listed in italics).

AERO CYANURIC CHLORIDE——*Industrial Chemicals Div, American Cyanamid Co, 30 Rockefeller Plaza, New York 20, N Y*——This booklet contains the latest data available on this product and discusses properties, chemistry and current applications in such fields as dyestuffs, lubricating oils, rubber chemicals, tanning, bleaching, resins, textiles, etc. Comprehensive information dealing with its handling and shipping is also included. It has an extensive bibliography as well.

ALLEN REFERENCE SETS FOR MICROSCOPY——*R P Cargille Laboratories, Inc, 117 Liberty St, New York 6, N Y*——Photomicrographs of 100 different hairs and fibers (natural, synthetic and manufactured) are now available to the fur and textile industries. The sets comprise 25 specimens each of commercial fur hairs, other animal hairs, commercial fibers, and synthetic and manufactured fibers.

These will be found useful for quality control, for microscopic comparison with commercial products to establish the identity of hairs and fibers, for industrial research, etc.

HANDBOOK OF MICROSCOPY IN TECHNOLOGY——*E Leitz, Inc, 468 Fourth Ave, New York 16, N Y*——Virtually complete coverage of microscopy today in many technological fields has been achieved in this new set of eight volumes recently published in Germany and now available in the United States.

The volumes were edited by Hugo Freund, and contributors include well over 100 of Europe's outstanding scientists in the various fields. They may be bought as a set or individually for $30 to $40 each. They are available only in German.

The books offer the latest data available in Europe on raw materials and their industrial applications, including textiles, chemicals and others.

INDUSTRIAL pH BUYER'S GUIDE——*Beckman Div, Beckman Instruments, Inc, Fullerton, Calif*——Users of industrial pH instrumentation will find this bulletin (No. 425) an aid in matching components such as meters, flow or immersion assemblies, electrodes and manual or automatic electrode switches.

The four-page illustrated guide shows pictorially which components replace older units and how older and newer components can be used together. It also includes a cross-reference chart to simplify electrode selection and tells exactly how to order pH equipment.

ORGANIC CHEMICAL CATALOGUE——*Antara Chemicals, Sales Div of General Aniline & Film Corp, 435 Hudson St, New York 14, N Y*——This brochure, one of a series describing Antara's products, lists the organic chemicals produced in commercial or semiworks quantities.

In the catalogue's index, each product is listed alphabetically under its *Chemical Abstracts* name and most common synonyms. In the data section, the chemicals are alphabetically arranged under the designation normally used by Antara. The products are described, minimum standards governing shipment are set forth, and hazards, when present, are listed.

POLYACRYLAMIDE (PAM)——*New Product Dept, Section C, American Cyanamid Co, 30 Rockefeller Plaza, New York 20, N Y*——This bulletin, No. 54 in the series, deals with polyacrylamide (PAM). Thus far hydrolysis, imidization, and methylation reactions of polyacrylamide have been studied. By the use of these reactions, products with a wide range of physical and chemical properties are obtained.

In addition to giving complete information on the new product's chemical and physical properties, the bulletin outlines potential applications for polyacrylamide, including those in the textile field. A comprehensive bibliography is also included.

SENSITIVE THERMOCOUPLES——*W A Lang, product editor, Minneapolis-Honeywell Regulator Co Industrial Div, Wayne and Windrim Aves, Philadelphia 44, Pa*——Specification Sheet 57 describes new two-wire thermocouples, with outside diameters of 1/8 inch and 3/16 inch. These are for use where sensitivity and accuracy are important, and where space is limited. They are available in lengths from six to 72 inches, and can be furnished with small open-terminal block assembly, general purpose head, or screw cover terminal head assembly.

SERIES 400 DIAPHRAGM CONTROL VALVES——*W A Lang, product editor, Minneapolis-Honeywell Regulator Co, Industrial Div, Wayne and Windrim Aves, Philadelphia 44, Pa*——Specification Sheet 429 covers a new line of Honeywell diaphragm control valves, designated "Series 400." Data include actuator and body specifications, flow characteristics and complete dimensions for the double-seated, single-seated and three-way types which comprise the new line.

TETRINES——*Glyco Products Co, Inc, Empire State Bldg, New York 1, N Y*——A full description of the effect and use of these chelating and sequestering agents is covered in this catalog.

Emulsion stability depends on many things, eg, type and concentration of emulsifier, ratio of oil and water, pH, etc. One of the factors contributing to emulsion instability, which is frequently overlooked, is the presence of trace amounts of polyvalent metallic ions, such as calcium, magnesium, iron and copper.

Emulsions made with anionic emulsifying agents, such as soaps of various types, are particularly susceptible to the presence of metallic ions. Cationic, quaternary compounds are also adversely affected by the latter. The source of most of this type of difficulty is found in the water used in making the emulsion. Almost all water, even so-called soft water, contains a certain amount of calcium and magnesium salts. Iron is also frequently present, originating from pipelines and equipment.

Distillation of the water will remove most of the hardness and in some applications distilled water is used. However, distilled water is not always available, or it may not be warranted on a cost basis in many industrial emulsions. In addition to the water, various ingredients used in emulsions contain trace amounts of polyvalent metallic ions.

The Tetrines®, commercially pure grades of ethylenediamine tetraacetic acid and its radium salts, are among those products which chelate and sequester contaminating polyvalent metallic ions which affect emulsion stability.

The Tetrines, it is pointed out, form water-soluble metal chelates which are inactive to further chemical reaction. They will not react with soaps to form precipitates or curds, it is claimed, and they will not react with quaternaries to destroy or lessen their efficiency. These chelating agents are said to make it unnecessary to use distilled water in almost all instances.

GENERAL CALENDAR OF COMING EVENTS

AMERICAN CHEMICAL SOCIETY

128th National Meeting—Sept 11-16, Coffman Memorial Union, Minneapolis, Minn.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

National Convention—Sept 26-28, Lake Placid, N Y.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Mid-Atlantic Textile Conference—Nov 3-4, N C State College, Raleigh, N C.

GARMENT DYERS GUILD OF AMERICA

Sept 9-10, Loebl Dye Works, Roanoke, Va.

THE FIBER SOCIETY

Fall Meeting—Sept 8-9, Massachusetts Institute of Technology, Cambridge, Mass; Spring Meeting—May 2-3, The Clemson House, Clemson, S C.

NATIONAL COTTON COUNCIL OF AMERICA

1955 Chemical Finishing Conference—Sept 20-21, Chalfonte-Haddon Hall, Atlantic City, N J; 7th Annual Cotton Research Clinic—Feb 15-17, Pinehurst, N C.

NATIONAL COUNCIL FOR TEXTILE EDUCATION

October 17-19, The Larches, Hopedale, Mass.

THE NATIONAL FEDERATION OF TEXTILES, INC

Annual Meeting—Oct 4.

NATIONAL SAFETY CONGRESS AND EXPOSITION

Industrial Safety Sessions—Oct 17-21, Conrad Hilton, Morrison and La Salle Hotels.

NORTHERN TEXTILE ASSOCIATION NATIONAL ASSOCIATION OF COTTON MANUFACTURERS

Annual Convention—Sept 29-30, Wentworth-by-the-Sea, Portsmouth, N H.

PHI PSI FRATERNITY

Annual Meeting—April 19-21, Alabama Polytechnic Institute, Auburn, Ala.

THE QUARTERMASTER ASSOCIATION

Annual Convention—Oct 27-28, Conrad Hilton Hotel, Chicago, Ill.

SOCIETY OF INDUSTRIAL PACKAGING AND MATERIALS HANDLING ENGINEERS

Packaging & Handling Exposition—Sept 20-22, Kingsbridge Armory, New York, N Y.

SOUTHERN TEXTILE EXPOSITION

19th Exposition, Oct 1-5, 1956, Textile Hall, Greenville, S C.

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION

Sept 14, Oct 11, Nov 9 (Hotel Commodore, New York, N Y).

TEXTILE METHODS AND STANDARDS ASSOCIATION

Fall Meeting—Sept 29-30, Clemson House, Clemson, S C.

TEXTILE TECHNICAL FEDERATION OF CANADA

5th Bi-annual Textile Seminar—June 5-7, Queen's Univ, Kingston, Ont.

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CLASSIFIED ADVERTISEMENTS

Advertisements in this section are restricted to HELP WANTED—POSITIONS WANTED—EQUIPMENT wanted or for sale. Rates, effective February 1, 1951: One-time, $10.00 per column inch; 3 consecutive times (same copy), $9.00 per column inch; 13 or more times, $8.00 per column inch; Position Wanted, $2.00 per column inch. Figure 38 average words per column inch. Publisher reserves the right to reject or discontinue any classified advertisement. Replies should be addressed: Box Number . . . c/o American Dyestuff Reporter, 44 East 23rd Street, New York 10, N. Y.

ABSTRACTING SERVICE—Abstracting and digesting of foreign patents and periodicals. Literature review and special reports in dyestuff and cellulose chemistry. PAUL WENGRAF, 88-36 ELMHURST AVENUE, ELMHURST 73, NEW YORK.

POSITION WANTED: An individual with an exceptional combination of plant, laboratory experience, desires technical-executive position with dyestuff, fiber manufacturer, or textile chemical firm. Textile college graduate. Experience includes Dyer, Finisher, Laboratory Director, Manager. Write Box No. 932.

WANTED: Large manufacturer of synthetic resins has excellent opportunity for technical salesman under 35 with minimum of BS in Chemistry (or equivalent). Prefer someone with sales experience in the textile, plywood, or foundry resin field. Permanent position open in Florida-Georgia territory. Write Box No. 943.

POSITION WANTED: PRINT SUPERVISOR-COLORIST. Extensive experience on MACHINE and SCREEN printing of cottons, rayons and synthetics. Proven ability taking charge of printing and color-shop departments. Age 42. Write Box No. 945.

AVAILABLE: Experienced dyer on synthetic, filament and spun fabrics, blends. Box work. Able to handle men. Graduate chemist. Write Box No. 956.

POSITION WANTED: As chemist, dyer, or in quality control, by graduate chemist experienced as laboratory director, dyer, finisher, and quality control head with full range of synthetic fibers. Northern New Jersey or metropolitan area preferred. Write Box No. 955.

JIG DYER WANTED: Preferably with box experience. Applications will be kept confidential. Fair Lawn Finishing Company, Fair Lawn, New Jersey.

TEXTILE FINISHER WANTED: Man between 30-40 with knowledge of supervising a finishing department for nylon, dacron, acetate and other synthetic fabrics. Must take complete charge of night shift. Minimum experience, 10 years. State experience an former employers. Plant approximately 50 miles from New York metropolitan area. Good salary for right man. Write Box No. 960.

POSITION WANTED: Graduate Chemist 47. Textile Colorist and Chemist. Intensively trained in technical laboratories of leading dyestuff manufacturer. Served and traveled several years in Near East as sales engineer for dyestuffs, auxiliaries and chemicals. Knows the area and its industries thoroughly. Seeks appointment as sales engineer for Dyestuff and Chemical Company intending to start operation in Near East. Applicant is American Citizen; speaks French and Arabic fluently. Write Box No. 961.

WANTED: Young man 21-30 years old for training as technical sales representative. Oustanding Chemical Company in southern territory. Should have textile chemical background. Please give personal data, experience, and salary requirements. Unusual opportunity. Write Box No. 962.

HELP WANTED: Wanted Philadelphia District Sales Manager to sell chemical specialties. We manufacture an excellent line of synthetic resins, softeners, detergents, etc. Low prices. Unlimited opportunity for right man. Write Box No. 963.

WANTED: DYER CHEMIST—Excellent opportunity for man with practical experience in knitgoods synthetic dyework. Partnership preferred or active interest in business. State experience fully in letter. All replies held confidential. Write Box No. 964.

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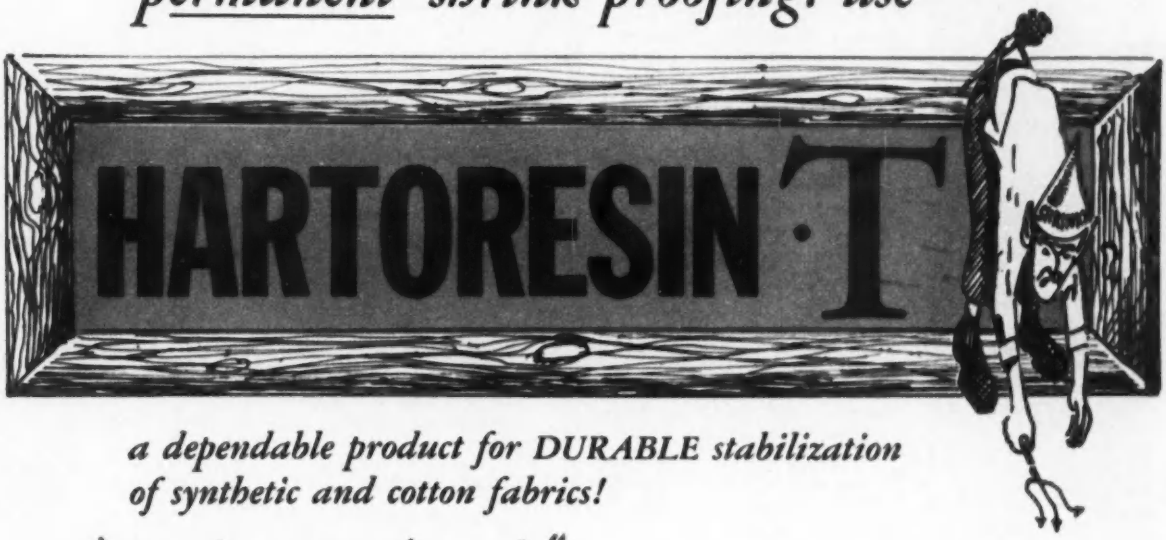

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HARTORESIN T — a genuinely outstanding development — provides lasting and complete shrink-and-crush-proofness for synthetic and cotton textile fabrics. A fabric stabilized for the life of its use is now a *reality!*

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Century 1030 (Low Titre Double Distilled White Oleic Acid) is free from odor, discoloration and rancidity; it finds wide acceptance in emulsifiers and specialty soaps.

Century 1220 (Double Pressed Stearic Acid) is used to make cationic softeners; it gives added permanency to softening effects on cotton and rayon.

Century Hydrex 460 (Hydrogenated Fatty Acid) — its low Iodine Value insures stability, prevents gumming and hardening when used in size softeners. Readily removable in scouring operation.

Samples and technical data available on the above products. These are but a few of the many Century Products designed for use in textile processing.

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Classified Advertisements

WANTED: OPPORTUNITY DESIRED for utilizing the knowledge and proven experience of 24 years in bleaching, dyeing, and mechanical and chemical shrinkage control elements of the textile industry. At the age of 41, offer a background of both production and executive accomplishments. Experience on natural and synthetic tubular textiles. Possess basic knowledge of the industry as a whole. Write Box No. 965.

POSITION WANTED: CHEMICAL SALESMAN, with mill following in South. Experienced sales, market research, sales development, technical service. Graduate chemist, married, two children. Presently representing national organization. Desire change offering greater growth potential. Write Box No. 966.

POSITION WANTED: Dyer-Chemist-Manager, college graduate. Interested in quality and production control, liaison. Good theoretical and practical background in most phases of textile processing. Diversified mill and laboratory experience. Strong supervisory experience. References, relocate. Write Box No. 967.

WANTED: HEAD FINISHER—Exceptional opportunity for Head Finisher in northern New Jersey dyehouse. Must be able to handle all types of finishes on acetate, nylon, dacron, cotton, and synthetic mixtures in taffetas, satins, failles and sheers. This individual must be able to handle men well and work closely with top management. Relocation expenses paid. Write Box No. 968.

WANTED: HEAD DYER — Must be able to handle dyeing of acetate, nylon, dacron, cotton, and synthetic mixtures in taffetas, satins, failles and sheers. Vat dyeing experience also necessary. Write Box No. 969.

WANTED. TECHNICAL SUPERINTENDENT — Unusual opportunity for technical superintendent in dyeing and finishing plant in northern New Jersey. Must be experienced with dyeing and finishing of synthetics, and familiar with dyeing and finishing equipment. Should have experience under a system of planned production. Write Box No. 970.

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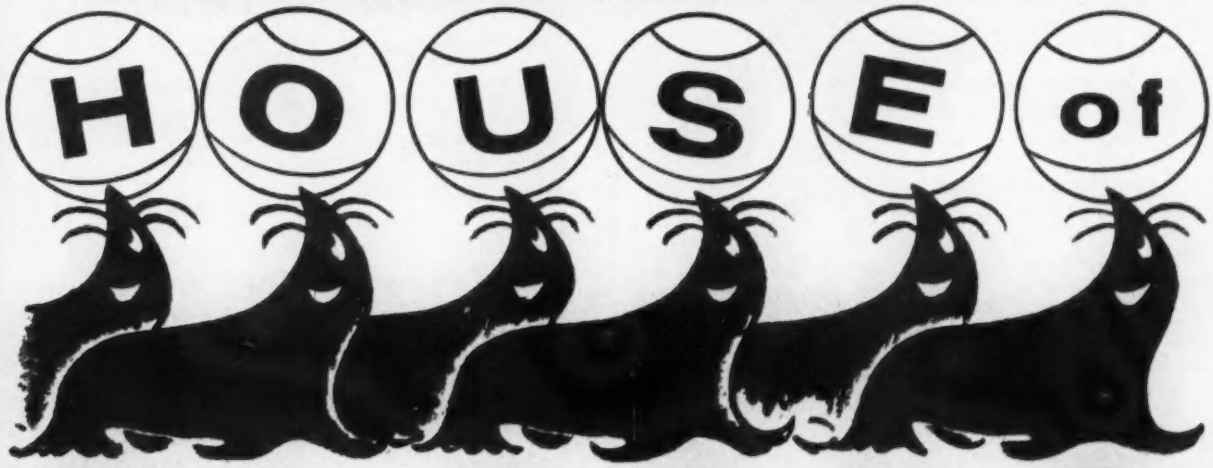

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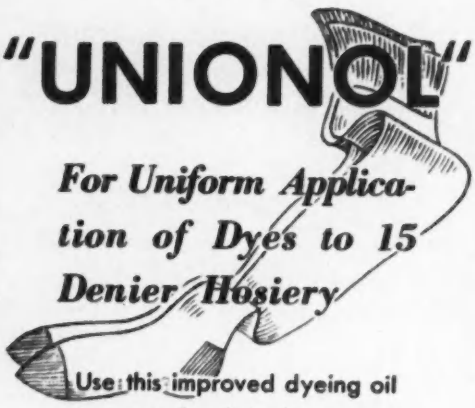

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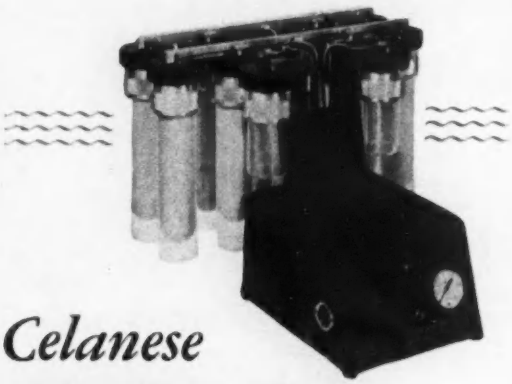

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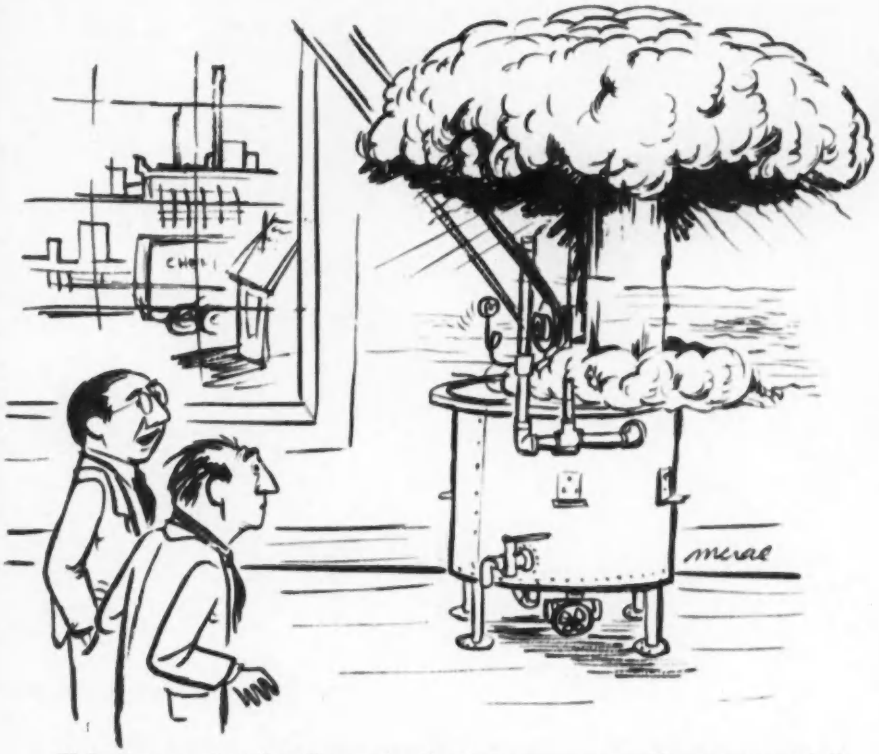

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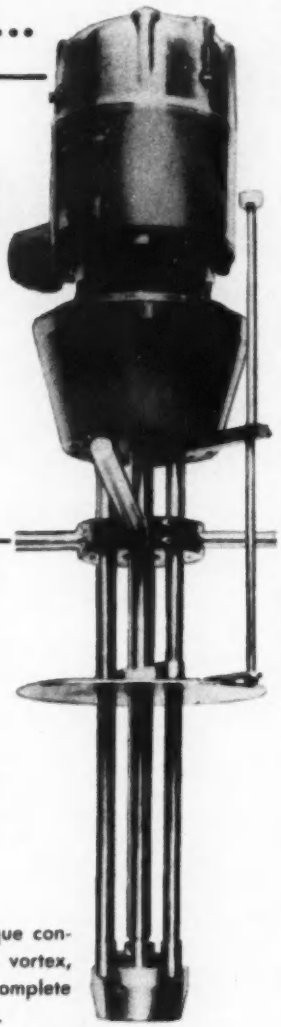

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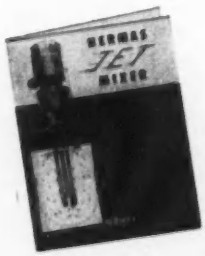

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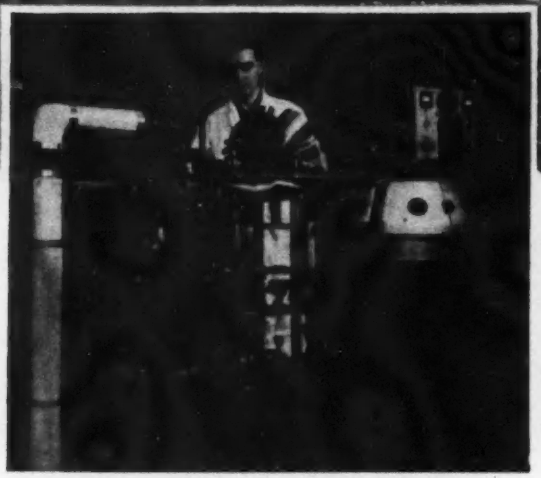

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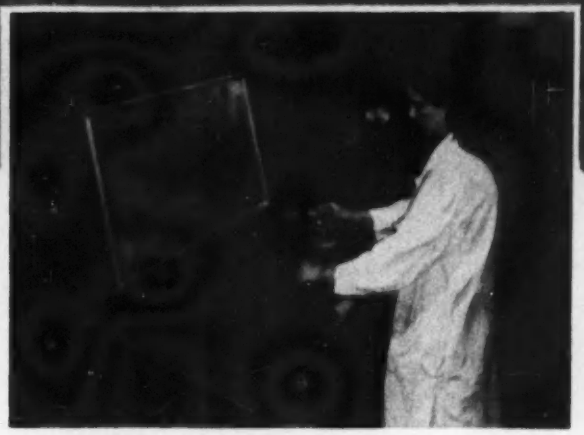
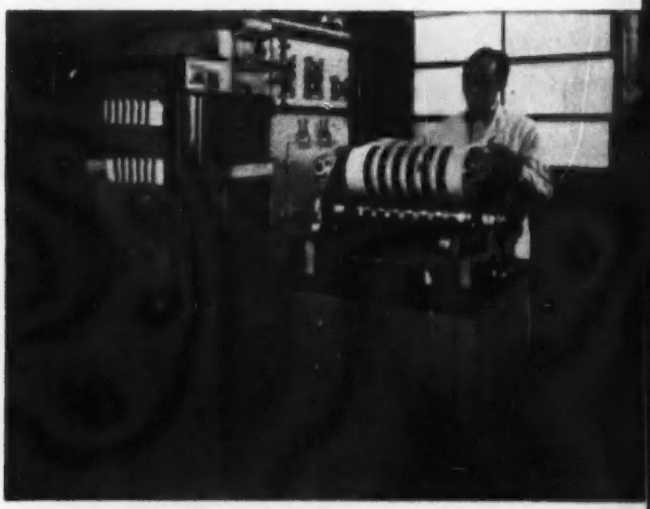
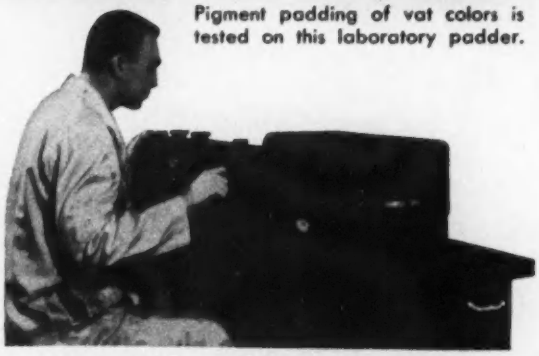


Fastness of Pittsburgh Dyestuffs to laundering is tested in laboratory in this stainless steel Launder-Ometer.

Pigment padding of vat colors is tested on this laboratory padder.



Printing and fixing characteristics of dyes are tested in printer in foreground and in vat ager in background.



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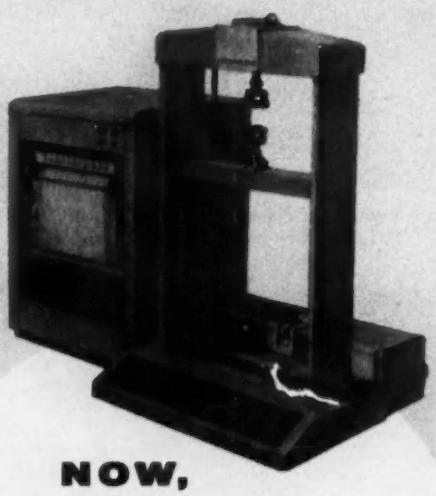

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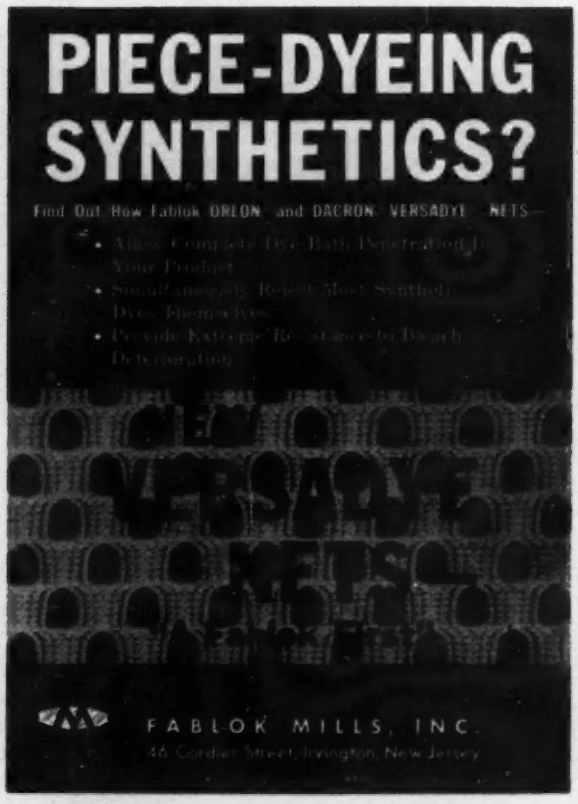

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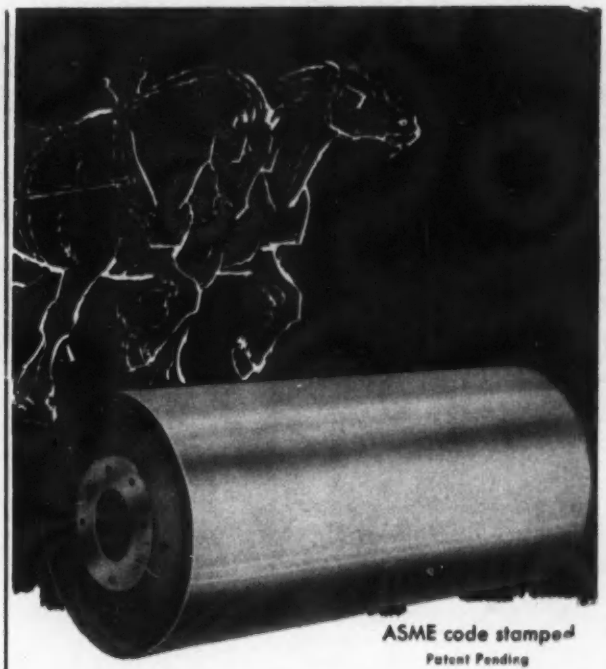

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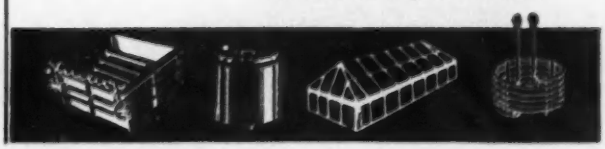

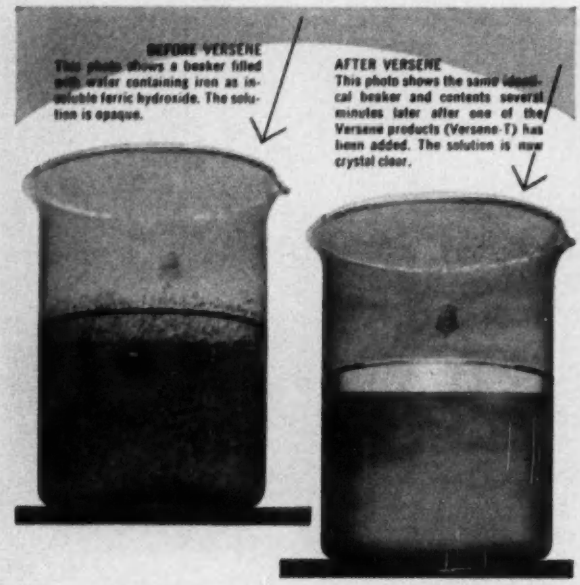
BEFORE VERSENE
This photo shows a beaker filled with water containing iron as insoluble ferric hydroxide. The solution is opaque.
AFTER VERSENE
This photo shows the same identical beaker and contents several minutes later after one of the Versene products (Versene-T) has been added. The solution is now crystal clear.

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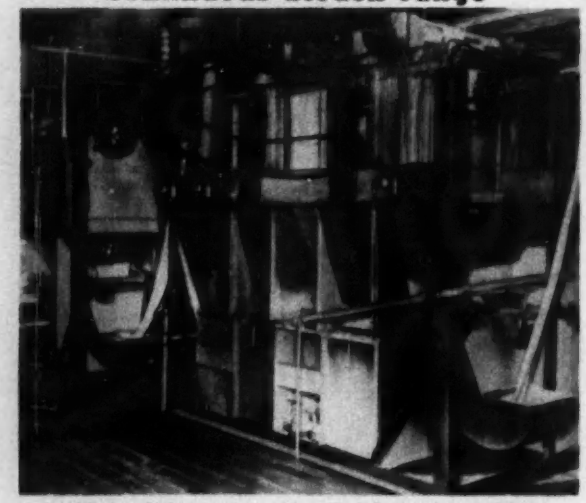
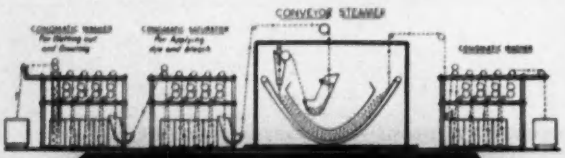


INSTALLATION VIEW OF CON-O-MATIC WASHER IN CONTINUOUS BLEACH RANGE



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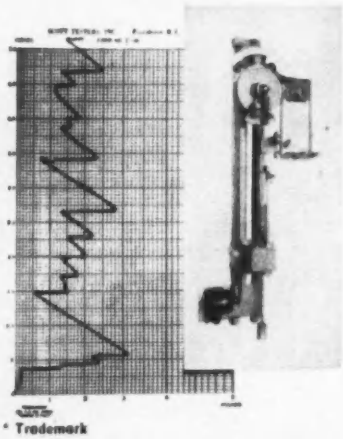

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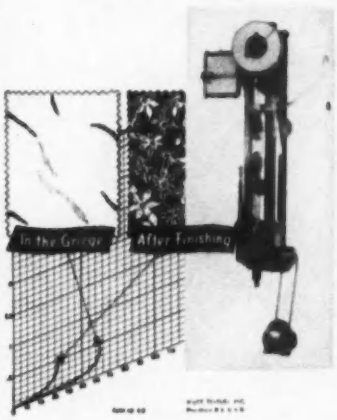

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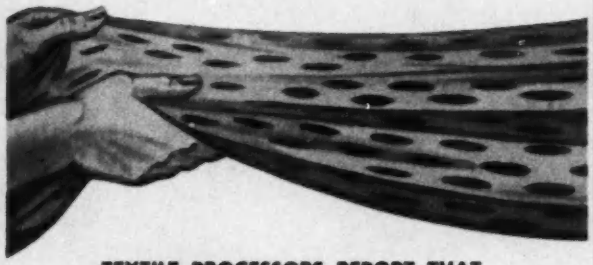

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